SD
.V58

JULY
1923

VETERINARY MEDICINE

1827 SOUTH WABASH AVENUE, CHICAGO

L. A. MERILLAT, Editor and Business Manager

ASSOCIATE EDITORS

L. H. Pammel	Maurice C. Hall	A. T. Kinsley	E. L. Quitman
John F. DeVine	E. Merillat	A. Eichhorn	J. I. Handley
J. F. Shigley	W. J. Martin	J. L. Tyler	Oscar Schreck

PITMAN-MOORE ANTI-HOG CHOLERA

SERUM IS THE ONLY SERUM THAT IS

AS GOOD AS PITMAN-MOORE'S

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVIII No. 7

Good Old Fashioned Common Sense

OUR host of customers realize that our price for Serum represents **real economy** for themselves and their clients.

They know "cheap" Serums seldom represent either satisfaction or economy.

It is becoming more essential every year for Veterinarians to insist upon Serum that is known to be **Pure and Potent.** Veterinarians have learned from hard experience that Serum with these qualifications is the only kind that will satisfy their clients. Especially this year, in view of farmer competition, it behooves every Veterinarian to buy the **best** Serum and Virus it is possible to secure. The Veterinarian who uses Serum that gives maximum good results year in and year out will never need to fear any reduction in his vaccinating practice. On the contrary, his practice will steadily increase.

We are not interested in seeing how cheaply Serum can be turned out regardless of quality. Instead we prefer to continue to turn out an honest product at an honest price and we know this policy is commended and appreciated by the rank and file of practitioners. Remember, no Serum Company can sell its product for more than it is worth. You get just what you pay for.

With "cut" prices to left and right, we are nevertheless showing a greatly increased business even over last year. It is clear we are at the threshold of another record-breaking season. The vast majority of Veterinarians have quit chasing rainbows and are pinning their faith this year more than ever before on the time-tired, upright brand that can always be depended upon to do the utmost required of it, namely:—

FORT DODGE

(No matter where you are located, we have a well-stocked Branch nearby.)

Fort Dodge Serum Co.

Fort Dodge — **Iowa**

PRODUCERS OF
WHOLE BLOOD ANTI-HOG-CHOLERA SERUM
CLEAR HEATED ANTI-HOG-CHOLERA SERUM
VIRULENT HOG CHOLERA VIRUS
VETERINARY BIOLOGICS AND SPECIALTIES

FORT DODGE
PIG SCOUR MIXED BACTERIN

Bacterial dysentery of suckling pigs is responsible for extensive losses in spring litters. Avoid these losses by employing **FORT DODGE PIG SCOUR MIXED BACTERIN.** Experience has shown that most dependable results follow its use both as a preventive and a curative in this troublesome condition.

Each 2 Mil dose contains **80 Billion** killed organisms as follows:

B. Suipestifer .....40 Billion
B. Paratyphosis b. .....25 Billion
B. Coli .....15 Billion

We market this product in 20 Mil, 50 Mil, 100 Mil and 200 Mil packages. In less than 500-dose lots the price is 10c per dose of 2 Mils. In lots of 500 doses and upwards, 7½c per dose.

Most practitioners consider this Bacterin to be almost a specific in scours of young pigs.

FORT DODGE
GUAIACOL COMPOUND

A REAL THERAPEUTIC SHEET ANCHOR

A perfect combination of:

Guaiacol—Eucalyptus Oil—Camphor Oil—Cresylic Acid—Saponaceous Oils

Invaluable in the treatment of vaccination sequelae, "Flu", and pneumonia of swine. The dose is one-half ounce of a 5% solution per 100 lbs. liveweight of pigs. Administer in soaked feed or in slop. Very economical to dispense as each gallon makes 16 gallons of dispensing solution. A sure "repeater" when dispensed as results are surprisingly and uniformly good. Each dose as above stated contains a therapeutic amount of each ingredient, including Guaiacol.

This preparation is an essential in Equine practice. It carries on a powerful antiseptic action throughout the pulmonary and intestinal tracts. Largely eliminated through the lungs, acting as an efficient resolvent and expediting tissue repair. Indicated in Influenza, Pneumonia, Bronchitis, Hydrothorax, and Edema Glottidis and other pulmonary disorders. Prescribed with cod-liver oil in Canine Distemper it is a valuable adjuvant to Bacterin or other treatment.

PRICE: One Pint, $1.25; One Gallon, $6.00; Two Gallons, $12.00; Five Gallons, $27.00

Fort Dodge Serum Co.

FORT DODGE, IOWA

VETERINARY MEDICINE

Published Monthly by the Veterinary Magazine Corporation,
1827 South Wabash Avenue, Chicago, Ill., U. S. A.

Entered as second-class matter, July 19, 1910, at Chicago, Ill., under Act of Congress of March 3, 1873.
Copyright, 1922, by Veterinary Magazine Corporation.

Vol. XIX CONTENTS FOR JULY No. 7

SUBJECTS

Analyses of the tractor situation.....602
Army Veterinary service.....638
Association meetings.....606, 607, 608
A broader conception of the veterinary profession .....625 to 629
Advertising clean milk.....601
Are malta fever in the human and abortion disease in cows caused by the same microorganism? 600
Biologics and sanitation.....600
Bossy as responsive as dobbin.....604
Classified advertisements 672
Case reports and comments.....648 to 660
Commencement reports and announcements.....666 to 670
Cauterization preferred to dehorning...605
Colostrum and normal milk compared..600
Capilliario-Motor harmone 600
Correct analysis of the situation by the Breeders Gazette 598
Dykstra broadcasts salient facts.....604
Editors personal page.....610
Economy the best platform.....599
Farmers hard hit by pig losses.....601
Feeding of orphan pigs.....604
Humane slaughtering of animals.....603
Hogs are popular among animals, some reasons why 603
Loss from animal disease diminishing..597
Let's take a hunch from Hygeia.....599
Live stock poisoning.....630 to 633
Mineral mixtures for pigs.....603
Morgan horse shown to be versatile....602
Milk substitutes devised for calves.....601
Humane glanders controlled by serum..600
Notes from the horse association.....603
Need of competent nurses in dog and small animal hospitals.....612
News items in the veterinary profession.....674 to 676
Pietertje of the University of California.629
Simple, old fashioned medications probably the best.....671
Swine problems of 1923.....634 to 637
Some aspects of dietary deficiency diseases and their importance to the veterinarian.....613 to 624
Purely practical 601
Swine in dairy states tubercular.....601
Should I buy a tractor.....602
Vaccine for abortion disease in mares..598
Zootechnic notes.....642 to 646

Veterinary Medicine

VOL. XVIX JULY, 1923 No. 7

Loss From Animal Disease Diminishing

By H. J. Waters, Editor Kansas City Star

(Courtesy of Dean Dykstra)

WITHOUT stopping to make a definite reckoning, few of us realize the rapid progress that is being made in reducing the loss of livestock from disease. We need to go back only a few years to find an untrained, unscientific horse doctor as the only aid the farmer had when his animals became ill.

Veterinarian a Practical Scientist

The veterinarian of that time was a strange admixture of prejudice, superstition and tradition; the veterinarian of today is a practical scientist. Then when a highly contagious disease like hog cholera or blackleg broke out in the herd the farmer was totally helpless; all he could do was to watch his animals die. Now he calls a veterinarian, who administers a serum and the disease is under control. Better still, the forethoughtful farmer has his animals immunized before they become ill and these destructive diseases are held in complete check.

Disease Problems Have Changed

Fortunately in that earlier day our animals had plenty of room, our farms were infected to a less degree by diseases and parasites and there was less chance of contracting disease than now. It is safe to say that if we had no better control of animal diseases and parasites today than we had then we could not maintain our livestock industry on its present intensive scale.

Illustrating concretely the effect of our progress in controlling animal diseases the year book of the department of agriculture for 1922, just off the press, states the annual loss of horses from diseases has been reduced from 22.3 per thousand in 1895 to 16 in a thousand in 1922.

Horse Losses Diminished

At this reduced rate of loss 150,000 fewer horses and mules die from disease in the United States a year now than died thirty years ago. Assuming an average value of $50 a head as a conservative estimate the saving at this point alone amounts to 7½ million dollars. This saving is not made once in a lifetime, but every year, and it is growing greater because the losses are becoming smaller as time goes on.

Better Hygiene a Factor

Not all of this saving, of course, is due directly to the ministrations of the veterinarian, for the horseman has in the meantime acquired much knowledge of sanitation and provides better conditions for his horses and mules and feeds them more intelligently than before. Yet this is another phase of the influence of veterinary medicine on farm practices.

Control of Swine Diseases Outstanding Improvement

In the loss of hogs from diseases and parasites the reduction has been even greater, as would be expected. In 1895 92.3 hogs out of every thousand died of disease; in 1922 this loss was 54.4 a thousand. In 1896 the loss reached the high point of 127 per thousand and in 1911 fell as low as 41 a thousand. This means a saving of some 2¼ million hogs a year from death due to the complete control we now have over hog cholera and to better methods of sanitation. These hogs have a value on a conservative estimate of some 20 million dollars. Of more consequence than the aggregate value is the effect upon the individual hog raiser. Now that we can control hog cholera, the tenant farmer or the man of small means is able to raise a bunch of hogs without fear of losing them after he has invested his year's corn crop in them.

Highly Compliments the Practitioner

If all the savings caused by the practicing veterinarian were added together a staggering total would be reached. Of even more importance than this saving is the service of the veterinarian in conserving the health of the human family. It is not too much to expect of medical science that the insidious disease, tuberculosis, may ultimately be stamped out of our country, but it cannot be accomplished without the help of the veterinarian. Be it

said to the credit of the veterinarians that they have been the leaders in the movement to make the United States free of tuberculosis.

Urges Support to the Veterinary Profession

We do well, therefore, to honor the veterinary profession. We do well to support generously the colleges educating men for this important profession, that they may be more scientific and more practical in their practices and that they may be of the highest type of citizen. We are merely promoting our own welfare when we give generous encouragement and support to the patient workers in the veterinary laboratories in the colleges and the department of agriculture where the discoveries were made upon which this new science is based and where discoveries are being made that will determine the progress of this indispensable service to agriculture.—Kansas City Star.

CORRECT ANALYSIS OF THE SITUATION BY THE BREEDER'S GAZETTE

"A number of veterinary inquiries come to us from breeders and stockmen living in communities in which there are no "graduate veterinarians" to consult. Some of the practicing members of this profession are not adequately trained in veterinary science, as it is taught today in the best institutions."

"We are not indicting a profession: veterinarians as a class are probably as competent and conscientious as any other class of professional men. We are merely pointing out that in some communities stockmen either do not have access to the best grade of veterinary talent or are compelled to patronize practitioners whose qualifications are technically meagre."

"Every stockraising community, however, has as efficient a veterinarian as it will support; if it demanded a better-trained man, it would have him, although there is a shortage of highly-trained veterinarians. "There is a reason:" it is that veterinary service has not been sufficiently recognized and rewarded in this country to induce many young men of the best grade to educate themselves for the profession. Some of those who have engaged in it are not properly educated for the increasingly difficult work which they are called upon to do."

"Stockmen are largely responsible not only for what patently is a low grade of veterinary service, in some regions and instances, but for America's shortage of veterinarians who are fully qualified for the highest grade of professional work."

"The *Gazette's* opinion is that many an established, organized stockraising community could well afford to employ a well-trained veterinarian by the year. His business would be to instruct and advise breeders in regard to animal hygiene and sanitation; to assist them in keeping their herds, flocks and studs healthy; to conduct tests, administer vaccines, biologics and treatment, when necessary; to certify to the health and sexual soundness of stock offered and sold; to act for breeders in all matters involving state and Federal regulations. As a live stock sanitarian, specializing in work designed to keep stock healthy, he would be worth much more to his employers than he could earn by treating developed cases of disease. The prevention of diseases is more economical and important than treating them. When communities in which stockraising is an established adjunct to farming begin employing or feeing graduate veterinarians for this kind of service, the "crop" of men qualified to serve the industry in accordance with modern veterinary science and practice will automatically increase."

"The future development, stability and practical value of the improved live stock industry will, to a greater extent than in the past, depend upon clean bills of animal health, vouched for by owners and veterinarians, and confidently accepted by purchasers. The selling of diseased or sterile animals for breeding purposes, whether it be a deliberate practice of the unscrupulous or an act of ignorant innocence, must cease. We are pleased to add that in recent years it has made reassuring progress toward cessation. It has long been outlawed by the conscience of the rank and file of breeders. The necessary next step is for breeders to place themselves in a position to issue clean bills of animal health, based upon a responsible, competent veterinary service."

VACCINE FOR ABORTION DISEASE IN MARES

The Kentucky agricultural experiment station for several years past has been engaged in research bearing upon the problems of the light-horse breeder as well as of the breeders of other purebred livestock. In 1916 after several years of investigation a bacterial vaccine was developed that has proved to be effective in the control of infectious abortion in mares.—Cooper.

LET'S TAKE A HUNCH FROM HYGEIA

Hygeia is the name of a new journal published by the American Medical Association. It is obviously intended to enlighten the public in the science of medicine. In other words, it is an advertisement of the medical profession, aiming to tell the people what medical science can do for them.

Like the veterinary profession, the rank and file of the medical profession has shifted along for centuries under the smoke-screen of mystery, always studiously withholding the plain medical truths from the masses, keeping them in abject ignorance in regards to the principles of scientific healing.

Secrecy Consecrated

Until quite recently physicians have pinned a great deal of hope on the secrecy of their favorite prescriptions, passing them down with reluctance and only to their immediate successors, and always guarding them against publicity with the greatest of caution. Although during the more recent decades a new code imposed upon the physician the duty of disclosing his methods to his colleagues, there has never been much inclination on the part of the medical profession as a whole to take the public into its confidence to the extent of divulging the truth and nothing but the truth about medicine. On the contrary, since time out of mind, secrecy, obscurity, and mystery have been a consecrated custom.

Old Policies Ill-Advised

That these old customs were ill-advised is now quite generally believed by the regular school of medicine. This is exemplified by the sanction the medical profession now gives to the publication of such a monthly as Hygeia and to the medical columns now running in many of the prominent newspapers.

A few years ago the great majority of practicing physicians would have objected to these medical columns and to the publication of a journal that exposed the facts of medicine. Today they are beginning to approve such publicity as good sensible advertising that does good both ways: to the people and to themselves, by drawing attention to what the medical profession is doing and can do for the masses. In fact, taking the public into its confidence promises to be a boom to the medical profession for the reason that the masses are thus being made to realize for the first time in history that the practice of medicine is sound in principle and altruistic in motive, and that its apparent mysteries are to be found only in the wealth of details and the intricacies of the knowledge required for its safe exploitation.

Similar Movement Would Help Us

The veterinary profession, which is still in its swaddling clothes, has evidently not yet grasped the point, as it still throws a convulsion whenever a bit of veterinary knowledge escapes to the owners of livestock. We are still jealous of our prescriptions, like the old physician, fearing always that if the stockman learns a little about veterinary medicine we are doomed, when in fact the very opposite result would obtain.

Secrecy and mystery tend to contract rather than to enlarge the field of practice, both medical and veterinary.

The American Veterinary Medical Association might do worse than to study carefully the wisdom of publishing "A Hygeia" for the benefit of the veterinarian.

ECONOMY THE BEST PLATFORM

The condemnation for tuberculosis of all or part of 266,950 carcasses of hogs originating in Wisconsin during the short period of seven months as officially announced, being but a small fraction of the total toll extracted from the nation's wealth, both the stockman and the people at large are beginning to realize that the cost of eradication, although seemingly large, is money well spent, and the encouraging feature of the situation developing is the attitude the agricultural press is taking everywhere, as compared with the former iconoclasm, when unproved statements as to the dangers of animal tuberculosis to human health was the only argument held out in appeals for legislative action. The fact is the stockman is beginning to realize that it does not pay to harbor tuberculous animals on the farm. They do not sell well, they do not do well, and those who raise them are being made to understand that they can not deliver them into the channels of commerce at the market price of healthy animals.

Commerce wants facts and when these are forthcoming there is no fear that facts will be overlooked, but it does not take much stock in unproved or exaggerated statements. When veterinarians were saying that nearly all human tuberculosis was contracted from cows tuberculosis eradication stood still, but when the packers began lowering the price of hogs originating from dairy districts, it went forward. This seems like a good hunch.

HUMAN GLANDERS CONTROLLED BY SERUM

Glanders in the human has been successfully overcome in two cases by the use of serum obtained from a horse that had been given repeated injections of Mallein under the directions of Drs. F. Torrance, E. Watson, M. Gallavin, and L. Heath, of the Health of Animals Branch Department of Agriculture in Canada.

A full report of the treatment of the cases and the preparation of the serum is anticipated with considerable interest by the veterinary and medical profession.

CAPILLARIO-MOTOR HORMONE

The mechanism of capillary activity has been an interestng study of physiologists for years. Recently Hrogh and his coworkers have shown that capillaries are contracted and dilated independently of the arterioles and are thus independent of the vaso-motor mechanism. It has been assumed that the circulation was dependent upon the heart's action and the vaso-motor mechanism but according to these investigators there is a third and very important factor they call "capillario-motor". This does solve some of the perplexing problems of the pathologist, such as functional hyperemia. They have identified a special hormone that causes dilatation the source of which is thought to be the pituitary gland.

BIOLOGICS AND SANITATION

A form of medicine which is but little better than quackery is practiced by those who place their entire reliance in drugs or biologics and exclude other factors for the prevention of disease. Biologics were neved intended to replace sanitation, disinfection, correct housing or other sanitary precautions, and good results following their use under such conditions must be attributed to luck rather than professional efficiency. Recognized sanitary and disease prevention measures and the use of biologics of proven value are each essential to disease repression. The use of anticalf-scour serum, for example, on animals which are allowed to remain in wet unsanitary surroundings or to retain an uncared for umbilicus frequently results in a streptococcal infection which results as disappointing as though a calf infected with scour were placed in sanitary quarfers without being given the specific serum. Either would be scientifically incorrect and devoid of results. Biological products used at the expense of sanitation will generally be devoid of results. Conversely, sanitation cannot replace certain biologics such as calf-scour serum, antihog-cholera serum and others. Theoretically it might be possible to control hog cholera by sanitation, but practically the success of such a venture would be disappointing if past efforts are any criterion.—A. E. Cahill, Pennsylvania Veterinary Conference, 1923.

COLOSTRUM AND NORMAL MILK COMPARED

Colostrum contains approximately twice as much albumen as normal milk. There is from 200 to 400 times as much globulin in colostrum as there is in noncolostral milk. The most important constituents in colostrum are the immune bodies. There appears to be a rather definite relationship between the flobulin content and the immune bodies in colostrum, and it is significant that both the globulin and immune bodies pass unchanged from the blood through the mammary gland of the mother and from the digestive tube into the blood of the new born. Proper pasteurization of colostral milk in a water bath does not change either the globulin or the immune bodies. Calves that receive colostral milk are more resistant to infections such as scour and pneumonia than calves deprived of this product. From the investigations that have been reported it is evident that colostral milk is nature's product for the protection of the new born mammal.

ARE MALTA FEVER IN THE HUMAN AND ABORTION DISEASE IN COWS CAUSED BY THE SAME MICROORGANISM?

According to a recent report, Alice C. Evans, Associate Bacteriologist, U. S. Public Health Service, produced an abortion in a four months old pregnant heifer by the intravenous injection of a 24 hour culture on a serum glucose agar slope suspended in 10 mils of physiologic saline solution. The B. meliteusis was recovered from the contents of the stomach and intestine and peritoneal fluid of the aborted foetus and from the colostrum of the cow.

This finding indicates a possible pathogenic relationship of the Brucela abortus and the B. Meliteusis, however, it is not positive proof of the identity of the two microorganisms. May it not be possible to produce abortion in pregnant bovines by the intravenous injection of B. coli, streptococci and other microorganisms?

Malta fever is a rather infrequent disease, at least according to reports, and yet thousands of humans are infected daily with the Brucela abortus by the consumption of contaminated cows milk. It would seem prudent to withhold final judgment until further evidence is available.

ADVERTISING CLEAN MILK

"When it is desired to advertise clean milk, the producer first of all should be absolutely certain that his product is clean. He should make sure that it is a product from clean, healthy, tuberculin-tested cows that these cows are kept in a clean stable, and are milked and cared for by clean men. He must be certain that it is handled with the most scrupulous care until it reaches the customer."

"In order that this care may be properly appreciated it might be well to interest some physician or organization of physicians to inspect the farm and then issue a published statement concerning how this milk is produced. It would be well to have these physicians make a regular monthly inspection."—Extract from Hoard's Dairyman.

MILK SUBSTITUTE DEVISED FOR CALVES

A very satisfactory milk substitute for feeding calves after the second week has been devised by the United States department of agriculture. The mixture consists of 50 parts finely ground corn, 15 parts linseed-oil meal, 15 parts finely ground rolled oats, 10 parts dried blood flour, 10 parts skim-milk powder, and one-half part salt. It is stirred up with warm water at the rate of 1 pound of meal to 9 pounds of water. The feed is increased gradually as the whole milk is decreased, until at the time the calf is 50 days old it is getting only the gruel. At this time 1½ to 2 pounds of the meal mixed with water will constitute a day's feed. Whenever there are indications of scours the feed must be reduced. When calves are vigorous, the following schedule may be adhered to in changing from whole milk to the substitute:

First week .....Whole milk.
Second week .....Whole milk.
Third week .....Three parts whole milk, one part gruel.
Fourth week .....Three parts whole milk, one part gruel.
Fifth week .....Whole milk and gruel, equal parts.
Sixth week .....Whole milk one part, gruel three parts.
Seventh week .....All gruel.

Grain and roughage should be fed with milk substitutes the same as with separated milk. Milk has to be very high in price to justify the use of substitutes during the first two weeks of the calf's life.

FARMERS HARD HIT BY PIG LOSSES

In an article run in the Sioux City Tribune, April 17, W. J. Kennedy of the Globe Serum Company, places the losses of young pigs in four states, from storms and cold weather, at 1,500,000 head. The states suffering most are South Dakota, Minnesota, Iowa and Nebraska. The announcement of this enormous loss carries with it the warning to take no chances with preventable disease, as indications point to a good market for early fall pigs. He advises farmers to have their veterinarians vaccinate their hogs and inspect them every month as a safeguard against scourges other than cholera.

SWINE IN DAIRY STATES TUBERCULOUS

Of 1,203,402 hogs slaughtered in the five principal packing plants in Wisconsin in the seven-month period ending April 28, 266,950, or 22 per cent, according to government inspectors, showed traces of tuberculosis. In 1922, out of 39,416,434 hogs slaughtered in the United States under government inspection, 5,640,061, or 14 per cent, showed tuberculous infection. The largest percentage of the infected hogs came from what is classed as "dairy states" east of the Mississippi River, while only about 2 per cent of the hogs slaughtered in Kansas City showed any indication of the disease, or the smallest per cent of any of the big packing centers.

Within the past twelve months a large number of cattle herds in both Missouri and Kansas have been inspected and some counties have been placed on the certified accredited list, and hogs from those counties receive a 10 cents a hundred pounds premium. The work of eliminating bovine tuberculosis in Missouri and Kansas is continuing under the supervision of state and federal authorities. The packers say that it means a big saving of money both to them and producers to buy hogs at a market where the percentage of tuberculous hogs is small.—Kansas City Star.

SHOULD I BUY A TRACTOR?

A film that weighs the relative advantages of the various forms of farm power under different conditions is being circulated by the United States department of agriculture under the department's distribution system. It points out the size of the farm, the lay of the land and the other considerations to be taken into account fundamentally in the matter of choosing between the horse and tractor. The farmer's handiness with machinery and his love for animals are given as determining factors.

Scenes photographed in various parts of the country are used to illustrate the different points discussed. It is even shown that the ox is in every-day and economical use in certain southern districts.

SEES BRIGHT FUTURE FOR HORSE

Dr. W. T. Duncan, Springfield, Missouri, writes Secretary Dinsmore of the Horse Association as follows: "Kindy send me some literature that I can mail to my farmer clients, also some to distribute to the dairies and bakeries of the city. The people are getting in line slowly. There are 180 more horses used in Springfield than two years ago. Our coal and ice companies here have stood by the horse better than the others. There is one transfer company works horses exclusively. The others use both trucks and teams. I can recall a few business men still using trucks who would like to return to horses but feel that they would have to junk their truck to do so. I think they will line up as soon as they are worn out."

ANALYSES THE TRACTOR SITUATION

We all know the reason for part of the depression in the horse practice, that the decrease in horse flesh and the increase in numbers of veterinarians, the motor trucks have taken the place of the dray teams, that has not only caused the city practitioner to lose out in that line of practice but has cut the country practice in two. We used to have several colts on the farms ranging from one year to four years of age which were unbroken with the addition of the horses that it necessitated for farm purposes. These colts were wormy, had the distemper, shipping fever or something wrong with some of them all of the time, but today we do not have that to contend with, which loses the local country veterinarian his living.

But the farmer will never be able to do his work with machinery, The ones that have tried the tractor out have found it impractical for the reason they must keep horses in addition to the tractor, and that calls for feed. The tractor salesman claiming that a tractor does not eat while it works, but when it does work it eats three times as much as the horse. Then why keep the horse and tractor both? They tell me it necessitates just as many horses to do the job with the tractor as without it.

Another drawback to the practical end of the tractor is the fact that only about ten per cent of the farmers are mechanics.

Cedar Rapids, Iowa. E. B. Fenton

MORGAN HORSE SHOWN TO BE VERSATILE

Some interesting information has just been made public by the United States department of agriculture regarding the registered Morgan horse Gladstone that won second prize in the 1922 Mounted Service Endurance Ride. Gladstone's record corrects the impression that it takes years to develop a good saddle horse.

This horse was foaled April 13, 1913; sired by General Gates, a famous Morgan horse; and out of Minnehaha, a mare purchased by the government in the State of Washington. He was broken to single and double harness when four years old and shipped in 1917 to the government experiment farm at Beltsville, Maryland, where he was driven 20 to 30 miles a day for several years with another gelding. He was the first horse selected from the experiment farm to go to the stables of the secretary of agriculture in Washington, D. C., to replace horses that had grown footsore from use on the city pavements.

In June, 1922, Gladstone was returned to the U. S. Morgan horse farm at Middlebury, Vermont, to be prepared for the Mounted Service Endurance Ride. Here he was used during haying raking hay in the fields, and at the close of the haying season was given his first continuous training under the saddle. The ride took place in October, and the little horse carried his rider and equipment, weighing 225 pounds, the 300 miles to a highly creditable finish. In the final rating Gladstone was but three points behind the winning horse. Twenty-one horses started the race and but nine horses finished. Gladstone was second, and finished in excellent condition.

Within a week Gladstone was back at work at the farm, where he is now being used every day in double harness.

NOTES FROM THE HORSE ASSOCIATION

A banker, who has recently loaned from four to five million dollars per month on farm lands, writes me that he instructed all resident banks to do everything possible to discourage the purchase of tractors or trucks by farmers.

Reports from all parts of the country are most encouraging to horsemen and those in allied industries. Tractor use is unquestionably being reduced and farmers in all sections are considering ways and means of using their teams in larger units.

J. Watson Webb of Shelburne Farms, Vt., writes me under recent date that after extended experience with tractors, they have found them too costly and are going back entirely to horse use in field work, and asks for full information on five or six horse hitches.

Wm. E. Scripps, millionarie newspaper publisher, banker and farmer, with extensive land holdings in Michigan, reports: "After a great deal of experimentation, covering six years' time with various makes of tractors, a comparison was made as to efficiency and expense and it was found that horses excelled. Therefore horses replaced tractors on Wildwood Farms."

MINERAL MIXTURES FOR PIGS

The mineral deficiency of the usual feeds creates a need of mineral supplements in the successful feeding of hogs, that all experienced veterinarians now recognise as worthy of their serious attention. Calcium and phosphorus are the two elements that are lacking in the composition of the cereal grains, and it is these that must be supplied. They must be supplied in some form that is practical and economical.

The agricultural experiment stations of the Middlewest states each have made their own recommendation in the form of circulars or bulletins which are summarized in a recent circular issued by the animal husbandry department of the University of Illinois as follows:

Ohio: Limestone and various forms of bone meal.

Iowa: Air-slaked lime or wood ashes, and salt, equal parts by weight; or, air-slaked lime, bone meal, and salt, equal parts by weight.

Wisconsin: Equal parts of ground limestone, salt, and either bone meal or ground phosphate rock; or nine parts of bone meal or ground rock phosphate, and one part of tankage for flavoring.

Indiana: Wood ashes or limestone 10 parts, acid phosphate, 10 parts, and salt one part, by weight.

These mixtures are given in the self-feeder at the rate of two pounds to each 100 pounds of grain or other concentrates.

HUMANE SLAUGHTERING OF ANIMALS

"After studying the methods of slaughtering practiced in many of the important abattoirs of France, Germany, Switzerland, Italy, Austria, Holland and Belgium I can say without fear of contradiction that these countries are all many years in advance of the United States in the methods of killing animals humanely . . Humane slaughtering is not a question of sentiment but one of right, and of justice we owe to the millions of animals in preventing a vast amount of needless suffering."—Dr. W. Reid Blair, Nat. Humane Review.

SOME REASONS WHY HOGS ARE POPULAR FARM ANIMALS

What is the basis of the hog's popularity, which, in spite of his relatively small size, enables him to stand third in total value among all our domestic animals in the United States? In the first place, of course, he produces toothsome meats which in some form or other combine well with most of our common vegetables, but, according to the Department of Agriculture, there are other reasons why the hog has become a favorite on more than three-fourths of our farms.

An Economical Crop Converter

The hog converts much of our corn crop, 30 to 40 per cent annually, into a concentrated food, and in this work of concentration he is no waster. He is an efficient user of feed. It takes about 6 pounds of grain and 6 pounds of hay to produce a pound of lamb (live weight), 10 pounds of hay and 10 pounds of corn to make a pound of beef, and 5.6 pounds of corn for a pound of pork. Hogs are frequently used to "hog down" or harvest crops and in this way they save the labor of harvesting.

In this country pork and lard enter prominently into our food supply. The average annual consumption per capita for the last five years was 67.3 pounds of pork and 12.5 pounds of lard as compared with 60.9 pounds of beef.

DYKSTRA BROADCASTS SALIENT FACTS

(Summary of a "radio" address broadcasted at Kansas City by Division of Veterinary Medicine K. S. A. C.)

Prevention of Disease the Principal Aim

The graduate veterinarian of today has, to a very large extent, become an immunologist; that is, he seeks to prevent animal diseases rather than to cure them. This is in line with the very high standards of the human medical profession.

In this connection, for example, there was developed, a few years ago, in the Division of Veterinary Medicine of the Kansas State Agricultural College at Manhattan, the modern blackleg vaccines. This is a remedy that absolutely prevents the deadly disease, blackleg, from developing in cattle. It is of such great importance because there are many sections in the United States, and especially in the southwest, where it is practically impossible to raise cattle to maturity unless they are vaccinated against blackleg.

Discoveries That Saved Millions of the National Wealth

This discovery alone has saved livestockmen of the United States in a single year more than all the money the states are expending for their state agricultural colleges and universities. Along the same lines, veterinarians in the United States Department of Agriculture a few years ago discovered a vaccine which prevents hog cholera. Previous to this discovery, the raising of hogs was such a hazardous business that many farmers admirably situated for it refused to enter it. These two examples, the saving of cattle from death by blackleg and the saving of hogs from death by cholera has aided very materially in reducing the cost of meat products to the ultimate consumer.

Summarizes Status

To summarize my brief address, the modern veterinarian's place in a community is as follows:

1. He safeguards the health of people by seeing to it that they have wholesome milk and meat.

2. He prevents dangerous animal diseases from gaining entrance to the United States from foreign countries.

3. He safeguards the health of meat-producing animals so as to prevent a serious financial drain upon the live-stock industry and thus prevents exorbitant prices of meats.

4. In time of war, the veterinarian again inspects practically all the foods consumed by soldiers and sailors. He keeps in good condition the large number of horses intended for army transport service, because in spite of the unusual development of mechanical motive power, the horse is still the foremost and most important motive power for the use not only of the army but of the American farmer as well.

TEACHING CARE OF MILK IN SCHOOLS

Methods of producing and handling milk so that it will be clean may be taught in schools, as well as other features of farm practice. For the benefit of teachers in farm communities, the United States Department of Agriculture has a bulletin on the use of Farmers' Bulletin 602, Production of Clean Milk, as a textbook.

As a preliminary to the lessons, a survey of conditions in the locality is advised, and suggestions for it are offered. Geography and arithmetic are studied in their bearing upon the dairy business; and written work on the subject can be used as language study. The bulletin which gives suggestions on teaching the subject is Department Circular 67.

"THE FEEDING OF ORPHAN PIGS"

The term "orphan" as applied to the human family designates a child that is deprived, by death, of one or both parents. As used in the following discussion, although it may not be etymologically correct, the term "orphan" is applied to pigs that are deprived of their mother's milk. Pigs may therefore be orphaned first by the death of the sow, either at the time of parturition or subsequently before the pigs are weaned: Second, by any condition that will cause a cessation of milk production. Pigs farrowed in excess of the number of teats possessed by the sow may also be designated orphans.

The successful feeding of orphan pigs is important because of the large number of them. Economically, it is worth while to attempt to raise not only pure-bred orphaned pigs, but also grades. It is advisable in the feeding of mammalian orphans to provide a food that approximates as closely as possible the composition of the mothers milk. The quantity and quality of sows milk should therefore be the basis for the preparation of food for orphaned pigs. The approximate composition of sows milk is fat 7%, albumen casein 6%, sugar 5.7% and ash 1%. The fat globule of sows milk is about one-quarter of the fat globule of cows milk. The average sow's production is from

four to seven pounds milk daily. The average litter is eight to ten pigs. The quantity of mothers milk produced by an average sow that has an average litter is about one-half pound per day for each pig.

Great care is required in feeding the orphans that are only one or two days old and especially if they were deprived of the colostral milk. If it is possible they should be permitted to suckle another sow at least once or twice. Such pigs should be provided with a modified milk. A modified milk that has been fairly successful in supplying the demands of orphan pigs from one to ten days of age, is prepared as follows:

One pound of cows milk, one pound of lime water, one-quarter pound of separator cream and one-eighth pound of sugar. If milk sugar is available and not too expensive, it will be more satisfactory than cane or beet sugar. The ingredients aforementioned should be mixed in clean sterile vessels and pigs from one to ten days of age should be given approximately ½ lb. equally divided in 4 or 5 different feedings daily. The basic principle that pigs should not gain weight until they are ten days of age should always be kept in mind when feeding orphans. After the pigs are ten days of age, the composition of the prepared milk can be gradually changed, reducing the lime water, cream and sugar, and by the time the pigs are three weeks of age ordinary cows milk can be used. It will be found that pigs two to three weeks of age will begin to consume grain. Readily digestible grain in limited form should be provided until the pigs become accustomed to the coarser feeds.

Generally speaking, it is not necessary to provide a nurse bottle for orphan pigs. If prepared milk is placed in shallow vessels and the pigs' nose firmly held in the milk in the vessel, it will soon begin to drink. It is usually not necessary to give more than two lessons until the pig is thoroughly educated to the necessity of drinking of his own volition.

Great care must be exercised in maintaining all equipment used in the feeding of orphan pigs, clean and sanitary, as well as their surroundings. By following out the foregoing general directions, thousands of pigs can be saved annually. A. T. K.

There are too many dairy cows in the United States for the amount of dairy products produced. By careful selection it would be possible to produce the same quantity of products by 80% of the cows now in use.

BOSSY AS RESPONSIVE AS DOBBINS

The short article in a current issue by C. G. Glendenning of Clinton, Illinois is interesting. I, too, started practice some thirty years ago during the good old days of horse practice. Nearly all my practice was among horses and having been raised among them I dearly loved my equine friends. Then, when horse practice began to wane I quit entirely. Later, I moved to another locality and entered the dairy business. I soon learned to love the cow as dearly as the horse and feel that her mission is and always has been a greater one than the horse has filled, for is she not the foster mother of the human race, without which nations would perish? I can understand her language, and surely no animal known to man responds as readily to kind treatment and appreciates what is done for her more than the cow.

I have never felt happier than I do now specializing on diseases of the dairy cow. Although I did not intend to take up practice again, practice took me up. Living in a dairy community the people no sooner learned that I was a veterinarian than they began to call me, and now I find no greater pleasure than that of trying to save the valuable animals without which the nation could not endure.

My advice is to look into the future and not into the past, for there plenty of inspiration is to be found in the call of any dumb brute about you.

Boyton, Florida B. F. Hopkins.

CAUTERIZATION PREFERRED TO DEHORNING

Cauterization of the horn "buttons" of calves is recommended by the U. S. department of agriculture as a better method of ridding cattle of horns than dehorning after the horns have grown out. The agent recommended is caustic potash in sticks. The caustic should be applied as soon as the horn bud can be felt. The hair is clipped over the bud, the end of the stick moistened slightly and penciled on the bud over a surface the size of a dime. The spot is penciled until the skin is raw. The secret of success is to moisten the stick just enough to prevent any of the dissolved caustic from running beyond the desired limit. The calves should be protected from rain to keep the caustic from running over the face.

Of 15,637 dairy cows supplying milk for Paris, France, 5,375 or nearly 35% gave a positive reaction to the tuberculin test.

Association Meetings

Montreal Our Convention City

MONTREAL, which will be the scene of the American Veterinary Medical Assn. convention in August, is Canada's greatest city and is second in picturesqueness only to quaint old Quebec, the "Citadel City" farther down the St. Lawrence. Montreal has a population of nearly a million, and is the commercial and financial metropolis of the Dominion. The world's seventh port in point of business done, it is 300 miles nearer to Liverpool than New York.

Chicago and Montreal are fairly near neighbors at present—but little more than once around the clock apart—but they will be linked together much closer when the St. Lawrence Canal is completed and Chicago commerce will go straight to the sea past Montreal, which is now head of navigation for large ocean-going steamships.

Montreal, then the Indian village of Hochelaga, was discovered by Jacques Cartier 386 years ago. Hochelaga means "beaver meadow." There were about 50 lodges surrounded by a triple palisade. Cartier, who was much impressed by its beauty and charm, was followed by that brave and hardy group of French explorers including Champlain, Pere Marquette and the great LaSalle. Today an army of tourists throng its big hotels, view its historic scenes and—many of them—enjoy its real beer, real ale and real Scotch without being law-breakers.

Travellers arriving in Montreal at the Windsor Station find themselves in the very heart of the city. This huge gray stone station is the largest building of its kind in Canada, and in it are located the main offices of the Canadian Pacific Railway. Directly across Dominion

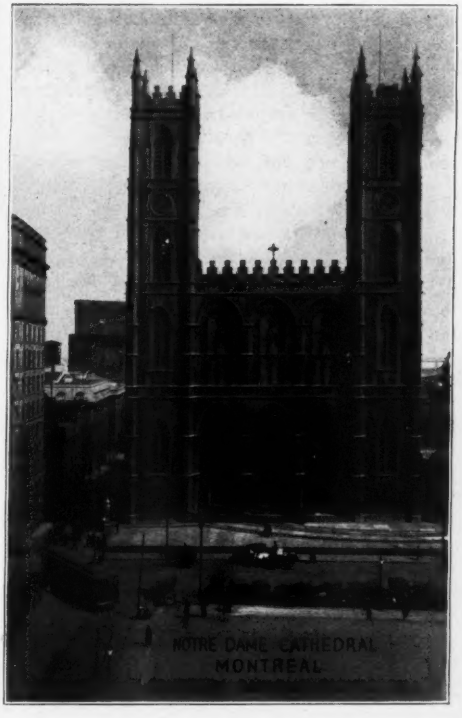
Square from the station is St. James Cathedral, a fac simile of St. Peter's, Rome, its gleaming dome towering 250 feet above the trees of the Park. Brooklyn has been called "The City of Churches," but Montreal holds first place, scores of religious edifices raising aloft their spires "like silent fingers pointing to the sky." Notable among them is Notre Dame de Bon Secours, the second largest church in America, which holds 15,000 people. Its twin spires are 227 feet high, and one of its great bells weighs 12 tons. It stands on the site of Ville-Marie, as Montreal was first called by white men

when Maisonneuve founded it nearly three centuries ago. His statue is one of the most picturesque features of the Place d'Armes.

One of the most interesting buildings in Montreal is the quaint old Chateau de Ramezay, now a museum. Built in 1705, it was the official residence of both the French and British governors, and in 1775-6 Benjamin Franklin and the American Congressional Committee occupied it while endeavoring to persuade the Canadians to join the thirteen states. General Richard Montgomery, of New York, had captured the city, and was later killed during an attack upon Quebec. Franklin set up in the Chateau his first printing press.

No visitor to Montreal should fail to view the vast panorama of the St. Lawrence from the summit of Mt. Royal, nor neglect to pay a visit to old Quebec, but six hours distant by rail. Perched on its historic heights more than 200 feet above the St. Lawrence, it is one of the world's most picturesque and interesting cities, recalling the days of Champlain and Frontenac, of Wolfe and Montcalm. The Plains of Abraham, the Old Citadel, Wolfe's Cove, Montmorency Falls, Dufferin Terrace and the Chateau Frontenac, the shrine of Ste. Anne de Beaupre, the Indian Lorette—these and scores of other places lend to Quebec a charm that lingers long in memory.

The 60th annual meeting of the American Veterinary Medical Association convenes at Montreal, Quebec, Monday morning August 27th for the usual five-day convention. The attendance promises to be exceptionally large from all parts of the United States and Canada. A special train will leave Chicago at 8:30 A. M. standard time, Saturday, August 25th on the Wabash railroad and will arrive at Kingston, Ontario Sunday morning August 26th for an all-day Sunday boat ride down the St. Lawrence, arriving at Montreal Sunday evening. Information as to the literary program and entertainment will be published in the August number.



The Kentucky Veterinary Medical Association will hold its annual summer meeting at Lebanon, July 25-26. J. A. Winkler of Newport is the secretary and the officer to whom communications should be sent.

Secretary P. B. Silvester announces that the summer meeting of the New Jersey Veterinary Medical Association will be held at Asbury Park July 12. The secretary's address is Princeton.

The annual meeting of the Veterinary Association of Saskatchewan will be held at the University of Saskatchewan, Saskatoon, July 24-25-26. The feature of the meeting will be a bovine clinic under the directions of J. F. DeVine, of Goshen, New York, associate editor of VETERINARY MEDICINE. Secretary Chasmir in a letter arriving too late for an earlier announcement predicts a large attendance and an exceptional meeting throughout.

THE MISSOURI VALLEY MEETING

Veterinarians of the Middle West and everywhere are again reminded that the annual meeting of the Missouri Valley Veterinary Association will be held at the Rome Hotel, Omaha, July 23-25. The incomplete program announced by Acting Secretary Steel presages another meeting of exceptional interest to the practitioners of the Missouri valley region. There will be contributions by Drs. Kiernam, of the United States bureau of animal industry; H. A. Wilson, state veterinarian of Missouri; L. Van Es of the University of Nebraska; J. W. Connoway, of the University of Missouri; N. S. Mayo, of the Abbott Laboratories, Chicago; H. Preston Hoskins Secretary-editor of the A. V. M. A.; and others, among which are Drs. R. C. Moore, N. G. Deiling, C. E. Ackerman, B. H. Brooks, J. W. Chenoweth, R. S. Foulk, F. Perrin, and R. S. Waldon. Abortion disease, swine problems and diseases, tuberculosis eradication, surgical treatment of wounds, the bursae of the horse, anthelmintics, poultry practice, fractures in small animals, and meat and milk inspection for small cities are among the contributions already listed.

There are 25,136 accredited cattle herds in the United States, and 345,829 undergoing accreditation, according to the March, 1923 Service and Regulatory Announcements published by the bureau of animals industry.

Secretary F. F. Fehr announces the semi-annual meeting of the Western New York Veterinary Medical Association will be held at the hospital of Dr. Anderson Croforth, 180 Walnut Street, Lockport, N. Y. July 12. There will be clinic, a dinner and a symposium on tuberculosis eradication.

The Chicago Branch of the National Association of Bureau of Animal Industry Veterinarians prepare a program for several weeks in advance on various subjects relating to meat inspection. Pathological specimens of interest, as well as rare conditions found by the inspectors are collected during the week and presented to the meetings for diagnosis and discussions.

May 14, 1923. The third talk on the "Lymphatic System and Its Importance to Post-mortem Inspection" was given by Dr. L. T. Hopkins, and illustrated on large charts showing the afferent and efferent vessels.

May 21, 1923. The collection of pathological specimens was so large on this date that no regular paper was presented.

May 28, 1923. Dr. L. E. Day, who has just recently returned from Central America where he had spent a few weeks looking for foot-and-mouth disease, was the speaker of the morning and he gave a very interesting report of his trip.

June 4, 1923. Dr. J. Hannon read a paper on Alcohol.

MINNESOTA MEETING AND SHORT COURSE

The 25th annual meeting of the Minnesota State Association and the university short course will be held at the veterinary building of the University of Minnesota, University Farm, July 18-19.

Secretary Fitch announces a program of exceptional interest to the veterinarians of that state. Among the reporters and subjects are: "The Changes in the Reproductive Organs Following Parturition" and "Demonstration of Ovariectomy in the Cow" by W. L. Boyd; "Overloading of the Rumen," by W. L. West; Circulatory Stimulants with Special Reference to Camphorated Oil," A. D. Hirschfelder; "General Anesthesia in Canine Surgery," J. G. Hardenberg; "Blood Tests in Abortion of Cattle," by C. P. Fitch; "Diseases of Poultry," by R. E. Lubbehusen; "Experiences as Judge in the Recent Endurance Test for Saddle Horses," H. E. Bemis, Ames, Iowa; "The

Horse Situation," by W. S. Corsa, Whitehall, Illinois; "Caponizing," by John Patterson, Hedrick, Iowa; "Diseases of Swine," by L. Van Es, Lincoln, Nebraska; "Treatment of Atresia and Strictures of Cows' Tests," by D. E. Bleeker; Case reports will be given by President Coffeen, W. A. Elver and J. S. Dick, Jr. Secretary Dinsmore of the Horse Association will speak on "The Utilization of Horse Power."

The meeting will be opened with an address by Professor A. D. Storm, director of the short course, and Dean Coffey of the department of agriculture will officiate as toastmaster at the annual banquet.

THE ILLINOIS VETERINARY CONFERENCE

The state association and university authorities of Illinois will hold a three-day meeting and conference of no ordinary significance at the University of Illinois, Urbana, July 10-12. The program copies of which have already been circulated covers the needs of the present-day practitioner with remarkable completeness, and augurs an exceptional veterinary meeting. Among the contributions will be:—

1. Address of welcome by Dean H. W. Mumford of the college of agriculture University of Illinois.
2. "Organization and Work of the Federal Bureau of Animal Industry," by W. N. Neil, chief inspector of the bureau forces at Chicago.
3. "The American Veterinary Medical Association" by President W. H. Welch, and a discussion by Secretary-Editor H. Preston Hoskins.
4. "The Relation of the Civil Veterinary Profession to the Veterinary Corps" Col. M. N. Keck, U. S. A. Discussion by Col. N. S. Mayo, V.O.R.C.
5. "Relations of Animal Diseases to Public Health" J. Howard Beard, health officer, University of Illinois.
6. "The Carrier Problem in Veterinary Medicine" Capt. R. A. Kelser, veterinary corps, U. S. Army.
7. "The Livestock Industry of Illinois" by W. S. Corsa, White Hall, Illinois.
8. "The Livestock Industry of Central America" by L. Enos Day, chief pathologist of the federal bureau of animal industry, Chicago.
9. "The Progress of Bovine Tuberculosis Eradication in Illinois" by J. J. Lintner, field veterinarian, federal bureau of animal industry, Chicago.
10. "Some Pointers on Infectious Abortion of Swine" J. W. Connoway, University of Missouri.
11. "The Mineral and Vitamin Requirements of Farm Animals" by H. H. Mitchel, associate professor of nutrition, University of Illinois.
12. "The Veterinary Profession" by Dean D. S. White, veterinary department of the Ohio State University.
13. "Infectious Abortion" by C. P. Fitch, University of Minnesota.
14. "The Feeding of the Dairy Cow" by W. B. Nevins, assistant professor dairy cattle feeding, University of Illinois.
15. "Sterility in Cattle" W. L. Boyd, University of Minnesota.
16. "Swine Diseases" J. T. McDonald, inspector federal bureau of animal industry, Springfield, Illinois.
17. "Discussion of Swine Diseases" by R. E. Kluck, D. C. Martin, H. R. Schwarze, M. H. Huggins, and J. H. Murphy.
18. "Anesthesia of Small Animals" of the Mayo clinic, Rochester, Minnesota.
19. "Check Testing in Tuberculosis" by W. A. Hahn, inspector federal bureau of animal industry.
20. Poultry Disease Clinic by G. R. Brown, Hoopston, Illinois.
21. Poultry Culling Demonstration by L. E. Card, professor of poultry husbandry, University of Illinois.
22. Cattle Sterility Clinic, Harry Caldwell, Wheaton, Illinois.
23. Dog Clinic E. A. Dickerson, Springfield, Illinois.
24. Horse Clinic A. J. Pilon, Champaign, Illinois.
25. "The Treatment of Convulsions in Canines," by E. L. Quitman, Chicago, Illinois.
26. Round Table Discussion by J. F. Gillespie, H. F. Jones, L. C. Brown, R. J. Hinkle, P. J. Tobin, N. L. Morin, C. A. Cox, C. E. Fidler, F. A. Britt, A. H. Baker, C. C. Glendening, and W. L. Hollister.
23. "The Field of Poultry Practice" by F. E. Beaudette, Kansas State Agricultural College. Discussion by E. E. Marsh, Springfield, Illinois.
24. "The Field of Swine Practice" by E. R. Steel, Secretary of the Missouri Valley Veterinary Association, Grundy Center, Iowa. Discussion by A. E. Cahill, Zionville, Indiana.
25. "The Essentials of Swine Feeding" by J. B. Rice, associate in animal husbandry, University of Illinois.
26. "The Veterinarians Relations to Agriculture," Professor H. P. Rush, department of animal husbandry, University of Illinois.
27. "An Agricultural Policy for Illinois" Chas. E. Ewing, chairman, committee on agricultural policy, Decatur, Ill. Discussion by L. A. Merillat, Editor, Veterinary Medicine, Chicago, Ill.
28. "Lead Poisoning in a Herd of Cattle" by J. S. Lucas, Abington, Illinois. Illustrated by stereopticon views of the affected animals. Discussion by L. F. Brown, W. E. Miller, D. H. Eastman, and Ira Dilley.
29. "The License to Practice Veterinary Medicine in Illinois" by V. C. Michaels, superintendent division of registration and education.
30. Motion pictures by W. J. Embree of the Western Weighing and Inspection Bureau among which are the famous Bureau of Animal Industry pictures entitled "She's Wild," "The Horse in Motion", "Behind the Breakfast Plate", "Exit Ascarids", "Texas Trail", "Railroads in United States History" and "The Ox Warble".
31. "The Intercommunicability of Avian Tuberculosis to Swine" by I. B. Broughton, associate in animal pathology, University of Illinois.
32. "Swine Industry in its Relations to Swine Practice" by W. V. Goussof, Peoria, Illinois.

From the above it will be noted the committee of arrangements under the chairmanship of Dr. Robert Graham has made a selection of subjects and of contributors that would have been difficult to improve. The officers solicit the co-operation of all Illinois veterinarians and extend the courtesies of the association to the entire membership of the veterinary profession, and especially to those in adjacent territory who may find it convenient to attend.

Chicago, Illinois. D. S. Jaffray, Jr., Pres.

(Officers of associations are requested to supply information in regards dates and special features of approachng meetings. The information should reach this office on the 12th of the month to assure publication in the next issue.)

The film "The Horse in Motion," distributed by the United States department of agriculture, is said to be in great demand by polo clubs, horse associations, riding clubs, county agents, and other organizations interested in horsemanship. The army has purchased eight prints of the film for its own use. Among the officials who are taking a keen interest in this instructive film is General Pershing, one of whose horses was used in making the production.

Editors' Personal Page

To earn more, learn more. The law of compensation is just and fair.

If we could once get into the mood of differing in opinion without quarreling we will have taken a long, long step toward settling many of our troubles.

The greatest calamity that can befall the veterinary profession is a decrease in the number and value of domestic animals, especially a decrease in the value of individual animals.

Those who scout the Henry Ford declaration about the substitution of domestic animals by machinery should remember that the dreams of yesterday may be the realities of tomorrow. So let's boost and not knock the consumption of animal products.

A highly valued exchange "Our Dumb Animals," issued its centennial number June 5th. It was founded by George T. Angell June 5, 1823, founder of the Angell Memorial Hospital for animals at Boston.

WE HAVE EXPECTED THIS

A student of one of the leading veterinary colleges writes: "Why should the veterinarian who has a high school education and spent four years in college not consider himself better qualified than those who have only a grade-school education and graduated in two or three short years "

When the veterinarians of the passing generation entered the field they used this same argument against the self-made man who had preceded them—the so-called quacks. It was quite as common for us to say that we had spent our time and money acquiring an "education" and as a consequence deserve a higher rating. This is history repeating itself. A few years hence when all professional men have a baccalaureate degree and have attended college six years, the present-day student will have to answer the same old question.

The difference between science and art is the difference between knowing and doing.

VETERINARY MEDICINE is at your service. Write us about your professional and technical troubles. We shall try to be helpful.

As you grow older be sure that you are not gradually being initiated into the "Could-Have-Beens".

Judging from the number of applications being filed for commission in the veterinary officers reserve corps the veterinary profession will soon give a good account of itself in the matter of filling the required quota.

Some people would have us believe that business is something vulgar. The Century Dictionary defines it as: "The supplying of commodities or services for the well-being of mankind." Let's stick to business.

Confirming the belief frequently expressed in VETERINARY MEDICINE that periodic ophthalmia of horses may be a nutritional disorder is in part confirmed by the fact recently shown by S. Moril (Jour. Am. Med. Assoc. 79 (1922) No. 3) that primary changes in the eyes of rats result from deficiency in fat-soluble A.

EXPERT TESTIMONY

Professional men should begin to realize the harm they do by giving testimony in court that is shaded to fit their side of the case instead of confining their statements to proved facts.

The attitude of scientific men in this connection has brought a great deal of discredit to them, often making them the laughing stock of the people. Added to the already overwhelming evidence of the truth of this is an extract from a recent decision of the Court of Appeals of Kentucky (White vs. Commonwealth of Ky.) which reads: "This court and many other courts regards expert testimony as the weakest kind of testimony". This seems to be a mighty severe arraignment of the scientific man—an arraignment everyone concerned should heed.

Purely Practical

Dairy cows are economical until they are about ten years old.

Insulin, the name of the new organ extract obtained from the pancreas, is one of the great medical discoveries of the day. Its antidiabetic action promises to be a blessing to mankind.

I have tried out chloral hydrate on small animals as described in the May issue and finds that it surely smooths out the rough places in my practice.—M. C., Kans.

A dog affected with an ear trouble that aggravates the condition by shaking the head can be helped in many instances by binding the ears down with a comfortably adjusted hood.

Arecolin hydrobromid is taking its place in the front ranks among the anthelmintics. It is said to expel all types of intestinal parasites in from 10 to 20 minutes. Seems too good to be true.

The dose of arecolin hydrobromid as an anthelmintic for canines is from one-sixteenth to one-quarter of a grain. It is given orally dissolved in a dram of water.

Let us repeat: The dose of carbon tetrachlorid as an anthelmintic is 0.3 cu.cm. per kilo of body weight. This means 2.25 minims per pound. The best method of administration is in capsules.

A good eye wash for all purposes in all animals where collyria are needed should be made up and kept in a stock bottle of convenient size on the shelves of the pharmacy. A good formula for this purpose is:—

℞

Sulphate of zinc	2 dr.
Boric acid	1 oz.
Rose water	12 oz.
Water, q.s.	1 qt.

The mixture should be poured off or filtered in twenty-four hours to rid it of precipitates. Atropin may be added to this mixture when required.

Cases of nicotin poisoning are increasing in frequency due to the fact that this alkaloid is being used quite extensively as an insecticide.

Oil of mirbane is the best drug to disguise the odor of turpentine, and alkanet is the best coloring. Turpentine is "something different" when these two agents are used to disguise it.

Anise may always be thought of as a good drug to flavor medicines to be given in the feed. Animal will eat mixtures containing anise that would otherwise be refused.

While acetylene gas is a good reliable anesthetic that promises to come into more general use it must be remembered that the gas made from crude carbide contains impurities (phosphin and hydrogen sulphide) which are poisonous. To make acetylene save as an anesthetic the gas must be washed of its impurities.

The most effective means of combatting infectious and parasitic disease is to prevent them. Cleanliness of quarters should be a law where good animals are at stake and all recently-acquired animals and all animals showing evidence of disease should be quarantined for a sufficient period to prevent infections from spreading.

A GOOD AND CHEAP COLORING MIXTURE

One of the best all-around coloring mixtures for general purposes in the veterinary pharmacy can be made from aloes. The formula is:—

℞

Aloes Barbadoes	1 oz.
Aromatic Spirits of Ammonia	2 oz.
Water, q.s.	1 qt.

The aloes and ammonia are shook up and let stand for a few hours before the water is added. This mixture will color clear solution from a rich-brown tint to a deep brown according to the amount used. A few drops in an eight-ounce mixture gives it a very desirable rich-wine color.

The Need of Competent Nurses in Dog and Small Animal Hospitals

By Major W. J. Ratigan, New Orleans, La.

I have read all sorts of things in your really satisfactory journal. This note may or may not be an exception. It is a fact that a lot of material printed in veterinary and medical periodicals gets to us first through advertising matter and in textbooks on specific subjects, then some fellow with a lot of time on his hands writes the "durned thing up again" a kind of rehashing as it were and some quack back in the unprotected hunting grounds reads it over and thinks the second cook is a darned handy fellow. . . .

Problem of Lay Help Important One

Getting back to our caption. One who has a select practice in a large city knows that the problem of lay help in a hospital is an important one. I have found some time since that male help is not suitable for all of the work in a small animal institution. Anybody who has had a couple of dozen crying and howling cases of parasitic infestation and other painful conditions thrust upon him as they are during a few hours some days, and often too, knows that men attendants do not love these cases and some are liable to be seriously dealt with. There are a lot of things tending to promote the well being of patients in a plant of this sort that are beyond the scope of men employed for the work but which seem to be an innate accomplishment of females.

Employs Intelligent Colored Women

Some dogs, especially young pointers and setters will actually die while undergoing treatment if they are harshly spoken to. I have seen them give up and "go down grade" for no other reason. To improve conditions in my plant, I have for the past year employed a number of carefully selected colored women. These women are usually graduates or undergraduates of colored hospitals. The senior girl here at present had been operating assistant to a dentist. These young women are intelligent, kind and indulgent to animals and respectful to clients. It is obvious one can not hire this sort of labor off the streets at random. I have to add a new attendant to the force occasionally and she is an understudy for a few days before being permanently hired, and must first of all come well recommended.

Cheap Labor Expensive

The porter work is done by a man and I think the best night attendant is an elderly man, at least I have one after ten o'clock at night. These three colored women are well paid and the work made rather attractive to them to encourage their best effort. I think many veterinarians' operating hospitals make the mistake of attempting to get cheap labor. It is most expensive in the long run, if one has a practice made up of people who want real service, and this seems an age of service.

Features Hospital Kitchen

While the thought is in my mind. We hear considerable about the wonderful operating rooms in some of the newly built dog hospitals, and they are an absolute necessity. Many of them are far from being sanitary, but they look good and satisfy the owner: but it is seldom one hears about the kitchen and it is a fact that the old "starvation method of treating a dog" is gone forever. I think I hear as much or more favorable comment about the kitchen in my hospital than I do about the operating-room. If you have a well arranged kitchen with clean utensils and a refrigerator big enough to hold enough good food that you are not ashamed if it is opened, you are in line for an occasional hearty slap on the back.

Comment: The hundreds of veterinary officers who will recall Major Ratigan as commanding officer of a veterinary hospital in France during the war will be pleased to read between the lines of the above article for news of his post-war activities and destiny, but will not be surprised that he maintains such a fine orderly establishment, in view of the splendid veterinary hospital he built, developed and commanded at St. Nazaire amid mud and other obstacles that might have discouraged a less resourceful man.—Ed.

The Illinois State department of public health has drawn up a contract all known typhoid carriers will be required to sign in order to escape continuous quarantine. The contract stipulates rigid personal hygiene, report on change of address, and prevention of handling or preparing food.

Some Aspects of Dietary Deficiency Diseases and Their Importance to the Veterinarian*

By A. D. Emmett, Ph.D. and H. Preston Hoskins, V.M.D., Detroit, Michigan

THE feeder of livestock should always bear in mind that one of the prime requisites for his success depends upon his ability to judge the quality of feeding stuffs, and to vary the proportion of the feeds that go into the ration so as to obtain the optimum productive values at a minimum cost. In the main his results, when measured by relative gains in weight or the amount and quality of milk, butter, wool, meat or eggs produced, are dependent fundamentally upon the nutritive value of the feeds consumed.

On the other hand, if the feeds are of poor nutritive value, or if they are combined in the wrong proportions, one will not only obtain poor economic returns but the animals will often develop definite pathological conditions which are now recognized and designated as "dietary deficiency diseases." It is recognized that the degree of success in the treatment of disease rests largely upon the ability to stimulate the metabolism of the animal so as to supply nourishment to the worn-out cells and thereby increase body resistance.

Therefore, if we have a fair conception of the principles of nutrition, of the approximate food and biologic value of the feeds, and of the pathologic effects produced by faulty diets, we are in a position to evaluate the facts in practical therapeutics. However, in the adoption of newer ideas the tendency is for one to become over enthusiastic, expectant and optimistic at the expense of reserve and conservatism. As a result, there arises a great difference of opinion and confusion, which in turn tends to retard rapid progress in scientific research.

The exact knowledge of deficiency diseases is unfortunately comparatively limited as yet, but enough scientific and practical data have been published to warrant the statement that the diet does play a very important, profound and specific role in the physiologic economy of both human and animal nutrition, and in the etiology of certain diseases. Furthermore, these findings suggest the possible relationship of inadequate diets or rations to the causation of some of the diseases which still have an indefinite or poorly defined pathogenesis.

FEED NUTRIENTS

Briefly stated, the general idea concerning the constituents of feeds is that they are water, protein, carbohydrate, crude fiber, fat and mineral salts. From this we calculate the nutritive ratio while the energy or heat value is expressed as calories or therms. Since about 1911, due to the valuable contributions from several of our agricultural experiment stations —notably Connecticut, Wisconsin, Ohio, Minnesota, Iowa, Illinois, Kansas and Kentucky— and the scientific laboratories of Yale, Johns Hopkins, Columbia, Lister Institute (London) and University College (London), we have come to consider not only these nutritive factors but with equal emphasis the components of which they are made.

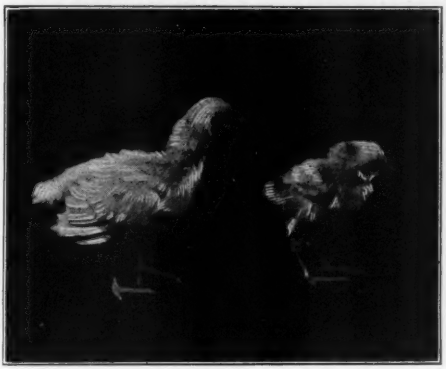


Fig. 1. Lack of vitamin B. These chicks represent two groups that were fed the same diet with the exception that chick on the right did not get the growth-promoting vitamin B. Note the contrast after feeding eleven days on the complete and deficient diets.

For example, the proteins which constitute the highly nitrogenous element in feeds, are made up of several parts called amino acids. Osborne and associates of the Connecticut Station have shown how varied the composition of the different proteins is; Thus, the protein zein of corn does not contain any of the amino acid lysin while casein of milk has the high value of 5.9 percent. Now, if we feed rations that are low and high in lysin to chickens as

Kastle and associates did at the Kentucky Station, it will be found in the one case that the chicks grow whereas in the other case they are stunted. In Chart I this fact is brought out clearly. Here we first fed a ration that was ample for growth in all respects except that

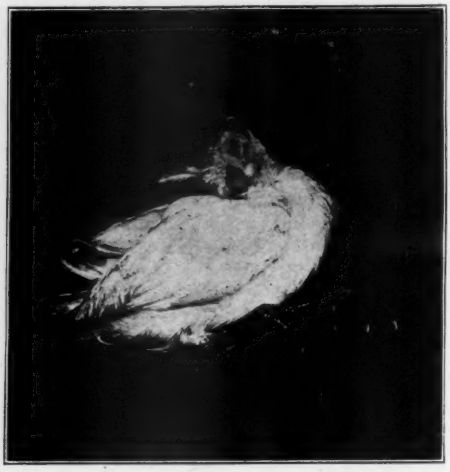


Fig. 2.—Lack of antineuritic vitamin. Chicken from the group fed on the deficient diet suffering from polyneuritis. When given a treatment of an extract containing this vitamin, the bird will respond in 3 to 8 hours.

corn gluten was used, but due to its lack of biological balance there was no growth. Later, when the equivalent amount of protein (at point C on the curve) was replaced by dried meat, immediately there was an increase in weight and development. The limiting factor here was the amino acid lysin which is a complex part of a complete protein. Other amino acids as cystin, trypotophane, etc., are also of great physiologic importance. The superiority of the protein of milk and animal substances compared with that of the leguminous seeds and cereal grains is of interest in this connection. Again, the amount of protein in the ration is a factor, for if it is too low the young animal will not grow at a normal rate but become stunted and not develop properly even though it is biologically complete.

In the case of carbohydrates as starch, dextrin, milk sugar, etc., it has been observed under definite conditions, that one can alter the bacterial flora of the intestinal tract of rats and dogs by simply substituting one kind of carbohydrate for another. Rettger of Yale and Torrey of Cornell found, in this manner, that the type of flora could be changed from the putrefactive (B. bifidus) to the fermentative (B. acidophilus). In the case of the white rat, we were able to stimulate growth by substituting an equivalent amount of milk sugar for part of the starch in the diet. On the basis of these findings, the effect produced by this change may be attributed to a readjustment in the carbohydrates.

ROUGHAGE

Roughage, or crude fibre, has a more important place in the ration than we usually assign to it. Thus, in the case of chickens fed in confinement on a ration, that chemically speaking, contained all the essentials necessary for growth, Osborne and Mendel did not obtain the expected response until they gave the fowl filter paper as roughage. Also, the use of small amounts of agar has been adopted with beneficial results by several in their nutrition experiments with young rats and mice. That is to say, it seems that there must be some sort of material present in the diet or ration which has the physical property of stimulating in some way certain physiologic functions of the alimentary tract, causing increased peristaltic action and proper evacuation. Otherwise, even though the ration is chemically complete, constipation and toxic poisoning may result.

FATS

In the case of the fats, it is well known that the hardness and firmness of the body fat can be altered by the feed, so that we may obtain, for example, by using a limited amount of cottonseed meal, a soft, flabby fat. With too much of this meal, toxic poisoning and even death may follow. There are other very interesting factors regarding the importance of fats which will be considered in connection with the vitamins.

MINERAL ELEMENTS

The mineral elements such as calcium, phosphorus, iron, magnesium, potassium, iodine, chlorine, etc., must be supplied in proper amounts if we are to have a normal physiologic sequence. These are needed not only for bone formation, but for the proper balance of the body fluids—blood and lymph—and the activity of certain glands. For example, consider iodine which exists in such small amount in feeds. It has a special relation to the thyroid gland which is an important endocrine gland in connection with metabolism. Also, McCollum and associates have recently presented evidence to show how important it is to have the calcium and phosphorus in the proper proportion.

Ratio More Important than Amount

They state that the amount is not so essential, within limits, as is the ratio of one to the other, for unless this is adjusted, the results may be either rickets or osteoporosis. We shall refer to this work specifically later.

At the Wisconsin Station, some interesting facts were observed in feeding swine on cereal mixtures of corn, wheat, oats and their by-products. In some combinations, the pigs developed marked leg-weakness due to the low calcium content of the ration. When wheat formed an appreciable proportion of the ration a marked toxic effect was produced. Other instances might be cited of this work; for example, feeding certain grain rations low in calcium to cows caused some to abort, or deliver calves which died soon after birth, while with such a grain as corn the calves were perfectly normal.

Vitamins Indispensable

Now, let us consider the place which the so-called vitamins occupy in relation to dietary deficiency diseases. While the vitamins, which have come into prominence so much in the last few years, have not been isolated in pure form, they have been partially separated, and by elaborate series of animal feeding experiments with rats, mice, pigeons, chickens, dogs and rabbits, the conclusion has been reached that these factors are of prime importance in normal nutrition. In fact, it has been proved that although the proteins, carbohydrates, fats and mineral salts may be present in proper amount and proportion for normal development, animals will suffer to a very marked degree from the absence of the vitamins.

Table I gives a summary of the most recent classification of the vitamins:

Type I—Types of Vitamins.

1. Water-soluble:
   - Vitamin B— (antiberiberi) Funk, McCollum.
   - Vitamin C— (antiscorbutic) Drummond.
   - Vitamin D— (yeast stimulus) Williams, Emmett, Funk.
2. Fat-soluble:
   - Vitamin A— (antiophthalmic) McCollum, Osborne and Mendel.
   - Vitamin E(?)—(antirachitic) McColum and associates.

Before considering these vitamins it should be stated that thus far it has not been possible to prove that the animal can synthesize or make these essential factors, except in the case of vitamin C, where rats, prairie-dogs and baby chicks either do not require it or else they can synthesize it. Further, the animal has only limited ability to store up the vitamins or to hold an abundant reserve. In other words, the prevailing opinion is that the ultimate source of vitamins is the plant kingdom.

In addition to this fact, the most recent observations lead us to believe that the vitamin content of plants depends upon the fertility of the soil and the season of the year. Take for example the case of cod-liver oil, which is extremely rich in fat-soluble vitamins, the cod-fish obtain their optimum supply of the vitamins

Fig. 3. Lack of fat-soluble antiophthalmic and antirachitic vitamins. These chickens were put on a diet that contained all the essential factors for growth and reproduction excepting the fat-soluble vitamins. Note the condition of the eyes and the leg weakness or rickets.

either directly or indirectly from the green algae in the spring, and as a result the livers at this season have a more potent vitamin-containing oil than in the fall. With these various facts relative to the completeness or inadequacy of rations and diets, let us discuss briefly the water-soluble vitamins B and C and the fat-soluble vitamins A and E(?).

VITAMIN B

In conducting the studies on this vitamin the pigeon, chicken, rat and dog have been used primarily. By withdrawing or diminishing the supply of vitamin B, when all the other factors in the diet are properly adjusted there results a gradual loss in weight and cessation of growth, food consumption decreases, and finally the adipose tissue is drawn upon. In the late stages, the animal reaches a condition described by many as polyneuritis, which manifests itself by a partial paralysis of the posterior extremities, in the rat and dog, and often by a retraction of the head and neck, in the pigeon and chicken.

Lack Causes Intestinal Stasis

Several workers, among whom Karr of Yale was first, consider this vitamin B as one relating specifically to the appetite. The lack of this vitamin brings about what McCarrison has called an intestinal stasis, as shown by the poor muscular and neuro-muscular tonus, which in turn also affect some of the digestive secretory functions. The administration of a vitamin-B concentrate brings about an increased tonus, evacuation of the digestive tract, and a correction of the polyneuritic manifestations, followed by increased appetite and vigor.

While a sharp differentiation cannot be made between the two conditions—avitaminosis and inanition—it is interesting to note, when we compare pigeons that are permitted to eat their food, *ad libitum*, with those that are force-fed, there is practically no difference between the two groups in the rate at which they lose weight. That is, the force-fed birds cannot make use of the extra feed to prevent the loss in weight. In such a case the deduction of Lumiere and Wright would seem to apply; namely, that the food assimilation is limited, due to the fact that the intestinal activity is practically dormant. The food, moving very slowly, ferments and produces toxic bodies which in turn reach the blood and produce many of the symptoms generally observed under such conditions.

Stimulate Metabolism

Karr has shown that the absence of vitamin B has no appreciable effect on the protein metabolism. Kennedy and Dutcher, using dairy cows concluded that inasmuch as the quality of the food in terms of vitamins influenced the appetite and also the vitamin content of the milk, vitamin B stimulated metabolism. Schumann and Abderhalden, with pigeons, and Anderson and Kulp of Cornell, with chickens, have reported studies in metabolism and respiratory exchange. They found that there was a decrease in appetite, followed by a loss in weight and heat production. They also found that with the onset of the disease there was a retardation in the digestive and assimilative processes, and that the heat production dropped as much as 40-50 percent. Upon recovering, following treatments with extracts, the metabolism and heat production rose to the normal within a short time.

Effect on Glandular Secretions Not Clear

For a time, considerable emphasis was placed upon the glandular alteration in vitamin B deficiency, but just how the glandular secretions of the digestive tract were affected is not clear at present. Uhlmann and McCarrison stated that the salivary, gastric, pancreatic and bilary secretions were retarded. Cowgill and Mendel, on the other hand, state that in the case of a dog, there is no direct evidence that these glands are involved. Further, Voegtlin's idea, that vitamin B and secretin are the same, does not seem to be justified.

It appears from the work of McCarrison or Cramer, and some preliminary studies of Emmett and Allen, under experimental conditions carried out by each investigator independently, that definite histological changes are brought about in the salivary glands, pancreas, spleen, thymus, ileum, colon, stomach and liver.

Its Influence on Other Glands

In young animals (pigeons, chicks and rats) on a vitamin-B deficient diet, Funk and Douglas were the first to note that the thymus became very much atrophied. This has been confirmed by several. The pancreas also showed a decrease in size. Various workers are particularly in agreement that the adrenals are enlarged and the testes atrophied. Recently, Dutcher has reported an elaborate investigation with cockerels, where he confirmed his former work and concluded that vitamin-B deficiency will cause a definite decrease in the weight of the testes. McCarrison's earlier work showed that there was a lack of spermatogenesis under such conditions.

With regard to the adrenals, opinions are somewhat conflicting as to the exact histopathological changes. The change has affected, in one way or another the action of both the adrenalin and the lipoid substances, and in turn this has had its influence on muscular tonus on the one hand, and the sympathetic nerve centers on the other, both of which might account in part for disturbances in the intestinal and reproductive glands.

Has Wide Range of Influence

In general, it may be stated that vitamin B appears, in the state of our present knowledge, to bear a relation to growth, appetite, digestion and assimilation. A partial or complete absence of this vitamin seems to affect in some way certain secretions of the digestive system, and to alter the functioning of some glands so that there is marked hypertrophy of the adrenals and atrophy of the testes, the thymus and possibly the spleen. The amount of lymphoid tissue is decreased and also the leucocyte count. It should be remembered, however, that as time goes on newer researches may change these views materially.

VITAMIN C

In guinea pigs on a diet deficient in vitamin C, there is a loss in weight concurrent with a decrease in appetite. The animals become listless and drowsy. Later, they take the "faceache" position, lying on their side. The posterior extremities become stiff and tender. Finally, the animals lose rapidly in weight and die about the third or fourth week.

Related to Calcium Metabolism

When this vitamin is absent or low in amount, the effect produced appears to relate to calcium metabolism. Howe, in his intensive studies on dental conditions in guinea-pigs, considers that vitamin C is a very important factor in infancy and childhood, and indirectly later in life. Both Howe, and also Zilva and Wells, report that the pulp of the teeth of guinea-pigs degenerates as a result of vitamin-C deficiency.

Robb, Medes, McClendon and associates have made a study of the relation of scurvy to preservation of guinea-pig teeth. The calcium output per day per 100 grams weight was 2½ to 3 times greater than the normal on a scurvy diet. The osteodentine in the pulp cavity was approximately 100 times as great as in the normal.

The adrenal glands are hypertrophied in scurvy. There is an involvment of the cortex and the adrenalin content is decreased. There is often calculi formation or a deposit in the bladder.

FAT-SOLUBLE VITAMINS

Some workers are now in agreement with McCollum and associates that the antirachitic factor is not the same as the antiophthalmic or fat-soluble A vitamin. For brevity, we designate the former as vitamin E.

In considering these two vitamins, animals fed a diet lacking them lose their appetite after a time and stop growing, decrease in weight, and manifest certain characteristic symptoms. The disturbances which follow, however, do not seem to be due primarily to a retardation of digestive secretions, although histological examination shows slight changes in the alimentary tract, but these are probably due to other causes.

Fig. 4.—Lack of the antirachitic vitamin. When dogs are fed on a diet that is lacking in the fat-soluble vitamins, they will develop rickets and ophthalmic conditions. The puppy illustrated was fed on bread and milk. Introducing cod-liver oil will correct this condition.

The adrenal glands are often hypertrophied. The liver shows no fatty infiltration that we find in rats on a lack of vitamin B; there is only slight atrophy of the spleen or thymus, and very rarely an atrophy of the testes. In chickens, we have often found the kidney and surrounding tissues to contain an appreciable quantity of urates. In rats this never occurs.

OPHTHALMIA

There has been considerable discussion in the literature relative to the etiology of the type

xerophthalmia—conjuntivitis and keratitis,—that many workers obtain in white rats fed a diet deficient in fat-soluble vitamins. We often obtain a condition similar to roup with young chickens on such a diet. It is very generally admitted at present that there is a definite correlation between the absence of the fat-soluble A vitamin and eye disease.

RICKETS AND OSTEOPOROSIS

Studies on the etiology of rickets have occupied the attention of Mallenby, Hess and McCollum and Shipley and associates for the past three or four years. In brief, these classical researches show that rickets is due to a combination of factors in which fat-soluble, antirachitic vitamin, the mineral elements calcium and phosphorus, sunlight and sanitation each plays a part. A low amount or a disproportioning of calcium and phosphorus, and of fat-soluble vitamin, in certain directions, will cause rickets, or osteoporosis. Treatment of rickets with a preparation containing fat-soluble, antirachitic vitamin, such as cod-liver oil will bring about rapid recovery.

Emmett and Peacock, and Hart, Halpin and Steenbock, have presented data which show that leg-weakness, a symptom of rickets in chickens is due, under definite conditions, to a low amount of fat-soluble vitamins. In our work this does not become evident in baby chicks fed on a deficient diet, for animals die from lack of these fat-soluble vitamins before rickets (leg-weakness) sets in. There is manifest, however, an edematous condition about the jaw, and the chick has difficulty in breathing—similar to air-hunger. In older chickens (7 to 9 weeks) rickets (leg-weakness) becomes evident in many cases. The chickens also show definite signs of an ophthalmic condition which is similar to roup in many ways. Treatment of the fowl with cod-liver oil, or a preparation specially rich fat-soluble vitamin will generally bring about recovery in both the leg-weakness and the ophthalmic condition, provided pathological changes have not progressed too far.

DENTITION AND CARIES

In like manner, it has been shown with dogs and rats that a low amount of fat-soluble vitamins will retard proper dentition and bring about conditions that favor dental caries. In our basal, fat-soluble-vitamin-free diet, we have had rats develop pathological conditions in which the teeth instead of being transparent become opaque and crumble away. The calcium metabolism is distinctly altered. Treatment with an active extract gradually brings the teeth back to normal. McCollum, Simmonds and associates, in reports bearing on this subject, show that proper tooth development and formation of the teeth can be altered by a disproportioning of fat-soluble vitamins calcium and protein. Phosphorus does not seem to be involved here, as in rickets.

FERTILITY AND STERILITY

From various feeding tests, with small animals, it has been shown that diets low in fat-soluble vitamins influence the condition of the male and female so that they may not be able to reproduce. This is true to a lesser degree with the other vitamins, water-soluble B and C. Reynolds and Macomber made a special study of the relation of faulty diet to sterility. They concluded that diets low in amounts of fat-soluble vitamins, or calcium, or protein, produced a definite decrease in the fertility of individual rats. The calcium deficiency was a most important factor and since a diminished supply of fat-soluble and antiscorbutic vitamins seems to affect calcium metabolism, these factors should be supplied in abundance.

PREGNANCY AND LACTATION

It is of extremely practical importance that we consider in this connection the relation of the vitamins to pregnancy and lactation. Funk originally suggested that the vitamin content of milk might be influenced by the ration or food consumed. Hart, McCollum and associates, and later Hartwell, showed that the ration had a definite influence on the offspring, and it was noted that unless the animal consumed vitamins in its food, the foetus would not be properly nourished. That is, vitamins A and B, not being synthesized in the body, must be obtained from without—from food or other sources.

The mammary glands obtain vitamins from the blood and in turn pass them on to the milk. Therefore, in case one of the vitamins is lacking in the blood, the milk will be deficient in the corresponding factor and the suckling young will be affected. The importance of having an abundant supply of vitamins during pregnancy is thus evidenced not only for the mother, but for the offspring as well.

Kennedy and Dutcher, of the Minnesota Station, from extensive experiments on dairy cows, observed that the amount of both vitamins A and B in the milk was dependent upon the vitamin content of the feed consumed. This is further evidence that one should use more than ordinary care to see that pregnant and nursing animals obtain an ample supply of vitamins. Hughes and associates of the Kansas Station

report that hens, on feed deficient in vitamins, produced eggs that were low in vitamins, and that there was a smaller percentage of vigorous chicks from these eggs than from those coming from the high-vitamin-fed lots. It was also reported, from the same laboratory, that the amount of vitamin in butter was influenced in direct proportion by the vitamin content of the ration fed to cows.

LOWERED RESISTANCE

Finally, we should bear in mind that with a low vitamin supply, the animal is more susceptible to infection, due to the fact that its resistance is lowered. For example, with a minimal amount of vitamin C, Guinea-pigs are prone to attacks of pneumonia upon the least provocation; and on a diet deficient in fat-soluble vitamins white rats often show definite symptoms of respiratory ailments of one kind or another. Cramer adds proof to this fact by showing that the offspring from rats, fed a diet which is near the borderline in its vitamin requirements, is more easily susceptible to infection than the off-spring from rats fed a ration rich vitamin. That is, the resistance of the former is much lower than that of the latter.

VETERINARIANS' INTEREST

With so much being said and written about vitamins and mineral requirements, nutrition and metabolism, and dietary or nutritional deficiency diseases, the veterinarian naturally wonders how much or how little these so called "new ideas" affect him and the practice of veterinary science. Perhaps it is not strictly correct to refer to these phenomena as "new ideas." It would be more nearly correct to refer to them as new interpretations of established facts, which we may now regard or examine in the new light shed by recent scientific investigations of the highest order.

Before going into the subject too specifically, let us first take an account of stock, and briefly review what has been going on around us during the past half-century, with particular reference to some of our ideas on the subject of nutrition, feeds and feeding, and animal diseases. Let us review how our ideas have change, first in one direction, then in another. Let us examine some of the present day practices in connection with the feeding of live stock, and then discuss a few of the animal diseases which are at present believed to be associated with improper feeding in its broadest application.

Fig. 5. Lack of the water-soluble C (antiscorbutic) vitamin. Guinea-pigs are very susceptible to scurvy if the diet does not contain the antiscorbutic vitamin. The above illustration, pig on the left, shows the typical faceable position.

CALORIE IDEA CHANGED

For a long time a certain school of investigators clung to the calorie idea, believing that if an animal received food containing the proper number of calories, sufficient for growth, maintenance and energy, that all would be normal from the standpoint of nutrition. This view had to be modified to the nutritive-ratio conception, which provided for the proper proportions of proteins, carbohydrates and fats, only to be changed again by such well-known

experiments as those of Hart, Humphrey, Steenbock and their associates at the Wisconsin Agricultural Experimental Station.

FOOD ESSENTIALS

Those who have followed the nutritional investigations of the last ten years are now confgronted with the following facts, from which it will be seen that both of the first groups of investigators were correct as far as they went, but they had not solved the whole question of nutrition. Carbohydrates, proteins and fats, as well as minerals, are essential to health. In animal feeding they may be combined in such proportions as to yield the most economical results, especially in growing animals, milch cows or work horses. The constituents of a ration being known and the quantities of each, the calorie value may be computed. There are certain minimums which must be met for growth, maintenance and production.

Now, in addition to these well known food constituents, it has been very definitely shown that other substances are essential in the diet for the well-being of the animal body. These exist in varying amounts in plants, grasses, fruits, vegetables, and seeds and are called vitamins. Some of them also exist in milk and eggs. As stated before, five of these vitamins have been found. Each appears to fill a different role, and the continued absence of any one of them from the diet is followed by the exhibition of certain symptoms. One of the functions of the vitamins is to render the food nutrients available to the tissues. The true chemical nature of vitamins is as yet unknown, and it has been said of them that they are better understood by what they do than by what they are.

MINERAL ELEMENTS VARY

Various mineral elements enter into the make-up of most diets. Certain foods are particularly rich in one or the other of the elements, such as potassium, calcium, phosphorus, iron or iodine. The absence of one of these in an available form may prove to be as serious as the lack of one of the vitamins. Thus "Hairless pig" disease, and congenital goitre, which have caused so much loss among the live stock in the Northwest are the result of iodine deficiency. Posterior paralysis of hogs seems to be linked up with a calcium deficiency. It has been rather strongly suggested that sore mouth (black tongue) of dogs, quite common in the Southern States, is a deficiency disease. Many other animal diseases, at this time poorly understood, may prove to be due in part at least to a deficiency of some particular mineral element.

Animal Husbandry Getting Away from Nature

It might be well to call attention at this time to the fact that some of the present day methods of modern animal husbandry, particularly in respect to feeding, are getting further and further away from nature. In his efforts to improve the quality of the animals it can not be denied that the animal husbandman has done his work well. The rewards have been commensurate with the cost expended in the production of a superior animal, because there is a phase of animal husbandry in which costs play a more important role, namely, in the production of beef, pork, mutton, milk and other animal-food products for the market.

One of the disadvantages of our present system of agriculture lies in the fact that the farmer and stockman must take for their products what the market is willing to pay. The selling price of the product of the farm and ranch is not based upon production costs, but upon supply and demand. Naturally the feeder of live stock must practice economy in his methods of feeding, and to the man who can most successfully utilize the lowest-priced feeds comes the greatest profits.

Much valuable assistance along this line has been given the feeder by the investigations of such men as Haecker, of Minnesota, Hart and Humphrey, Wisconsin, Armsby of Pennsylvania, Munford of Illinois, Forbes of Ohio and Everhart of Iowa, and it is safe to say that those who follow the teachings laid down by such authorities as those mentioned will encounter little trouble in the way of dietary deficiency diseases.

It is only when an attempt is made to utilize some unusual feed, or certain by-products, that the feeder is likely to get into trouble. We might add that some localities, usually on account of the soil, are not well adapted to animal production. When efforts are made to utilize pastures in such territories trouble may result. One other factor might be mentioned, and that is the possible damage that may be done to a perfectly good food through modern methods of manufacture.

Veterinarian Should Understand Principles of Nutrition

It is the duty of the practicing veterinarian to have a solid understanding of the principles of nutrition, the functions of the various food elements, their relative costs and values, as well as their availability, adaptability, palatability, etc. He should be quick to recognize

the existence of trouble due to nutritional errors, by being able to analyze the information available and to place the proper value upon each fact or bit of information. Having diagnosed the case correctly, he must be able to recommend the proper treatment including any change or alteration in the diet that will remove the fault, and all in such a way as to cause his client the least loss.

Etiology of Certain Diseases Misjudged

It has been said that fad plays its part even in health and disease. As soon as it becomes generally known and accepted that germs were the cause of many of our well-known diseases, it was perfectly natural that many abnormal conditions and diseases of unknown etiology should be regarded as infectious in character, and for a long time it was believed that every disease that was characterized by prevalence in a certain locality, or at a certain time or season, was caused by some specific micro-organism. In some cases this belief was adhered to, even though there was much evidence to the contrary.

The danger to be avoided at this particular time is to keep ourselves from being carried away with the "new idea." That there are such things as vitamins can not be denied. That certain mineral elements are indispensable in the diet is beyond controversy. That we must take in the minimum of protein, work, maintenance and repair is firmly established. To these known facts we must now add the knowledge of vitamin requirements. It would appear, too, that in the great majority of cases there is enough variety in the diet to insure all these things, especially if the feeder does not get too far away from feeding normal foods, or what would constitute a natural diet.

Furthermore, it is quite likely that the animal in health, being fed a balanced, normal ration, does not need any supplementary medication to insure the presence of either vitamins or minerals in the diet. We have experimental evidence of this from our own investigations, not to mention our every day observations. Thus, we found in feeding lots of pigs on definite nutritive planes that the addition of vitamins above the apparent normal need, had no beneficial effect in making larger or more rapid gains. The same thing was observed by us in feeding two lots of cattle. Further, in feeding trials with laying hens, the egg production, covering a year, was practically the same in the control and treated groups.

Animals that are abnormal, the result of having been fed improperly, on a so-called "one-sided" diet, or animals whose digestive system has been affected by severe sickness, present an entirely different condition, and we are just as positive in our statements to the effect that the veterinarian has here an opportunity to display his ability as a therapeutist, or as a dietitian, in the judicious handling of such cases.

DISEASES DIETETIC IN CHARACTER

Let us now turn to a few conditions met with among animals, that are strongly suggestive of being associated with some dietetic fault, resulting in nutritional disorders. We are probably safe in saying that, as a class, we know more about the dietary deficiency diseases of poultry than of most other animals with which the veterinarian comes in contact, for the reason that investigators have made extensive use of chickens and pigeons in the study of vitamin requirements and various deficiency diseases. These studies are being continued and we may expect valuable information to result from the investigations under way.

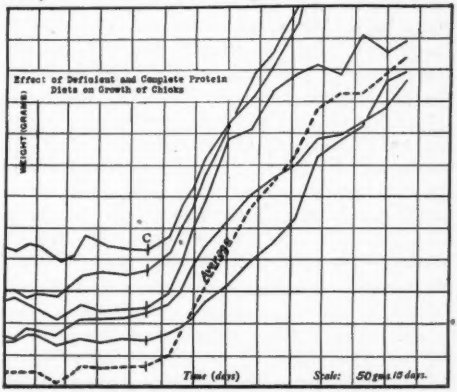


Fig. 6. Chart 1—Effect of deficient and complete protein on growth.

NUTRITIONAL ROUP

In 1920, Haring, Beach and Jaffa, of the University of California, reported upon a nutritional disease of poultry which resembled roup. This disease had been encountered in a considerable number of flocks and was characterized by the following symptoms: weakness, emaciation, and the formation of lesions in the eyes, mouth, pharynx and esophagus, similar to those which we are in the habit of designating as roup. There was the usual accumulation of cheesy material in the eyes, discharge from the nostrils and yellowish white patches in the mouth and throat. Post-morten examination

usually revealed functional disturbances in the kidneys. It was reported as not uncommon for over one-half of a flock to be affected at the same time.

It has become customary to regard roup as an infectious disease and various micro-organisms from time to time have been incriminated by different investigators as constituting the etiological factors. The disease usually has the general appearances of an infection which spreads through a flock and causes heavy losses. Under natural conditions the disease is most frequently encountered during the late winter and spring months. It might be well to direct the attention to this point of seasonal occurrence. If there is a time in the year when the feed might be suspected as being at fault, it would be during the late winter and spring. At this time the supply of green food carried over from the previous fall may run short, or that which has been successfully carried over may be low in vitamin content. In this connection it might be stated that it is at this season of the year that breeders of guinea-pigs experience the greatest trouble and frequently lose a large part of their crop of pigs from scurvy on account of being unable to supply their stock with green food in the form of carrots, beets, cabbages, mangels, etc.

Bacterial Cause of Roup Not as Yet Confirmed

Returning to the disease reported by the California investigators, we may say that their bacteriological investigations of the disease were negative. All transmission experiments were equally unsuccessful, either by inoculation with pathological material or by natural exposure of healthy with diseased fowls. Some success in controlling the disease was obtained by changing the feeding methods, it having been suspected that the trouble was the result of feeding rations short in green food.

Between the two theories as to the causation of roup we may say, that, at the present time, we must withhold final judgment. Attempts to reproduce roup by inoculation with pure cultures of the organism obtained from roup lesions, as well as with suspensions of exudates and tissue debris obtained from diseased birds, have been attended with negative results at the hands of various investigators. We must now await the result of carefully planned and executed experiments to demonstrate that this disease can be reproduced experimentally in birds by feeding rations deficient in some one of the vitamins or some important food element. Research work may reveal that the organisms which have been found associated with roup play only a secondary role, the primary pathological changes being the result of disturbed metabolism due to some dietary deficiency.

LEG WEAKNESS

Another condition seen among chickens is the so-called "leg weakness". Although this has never been charged to infection, the etiology of the condition has not been thoroughly understood. Various hygienic and dietetic errors have been ascribed as causing the condition, such as lack of exercise, overfeeding, or absence of green food. It would appear from the laboratory investigations of Osborne and Mendel previously referred to, that the disease differs from most dietetic deficiency diseases in that it is not always the result of a faulty diet as commonly observed, because the addition of butter, fat, yeast, green cabbage, green clover or orange juice did not help in controlling the leg weakness. However, when suitable roughage was added to the diet the disease was prevented. Even when such a non-nutritious form of roughage as paper pulp was added to the ration, this appeared to serve the purpose admirably and the disease was prevented.

HAIRLESS PIGS (FETALATHYROSIS)

A good illustration of a disease in which a single element plays an important part is the so-called "hairless-pig" disease. This has been pretty conclusively demonstrated to be a disease resulting from a deficiency of iodine. The disease was first reported from the Northwest and considerable study was devoted to it by the Montana Agricultural Experiment Station. In a Bulletin issued by the University of Montana it was estimated that 100,000 pigs were lost annually in that state alone. Many other states and Canada have suffered losses from the same condition to a less extent.

The disease is peculiar in that the sows carry their pigs to full term and these appear to be fully developed when farrowed, but are almost entirely devoid of hair. Examination shows that the thyroid glands of the hairless pigs are enlarged, sometimes to ten times normal. Chemical analysis of the glands shows the iodin content to be very low, and the degree of hairlessness is inversely proportional to the iodin content. The lack of iodin in the food results in goitre which is invariably associated with the hairless condition of the pig. The symptoms are those of myxedema. There is usually a noticeable enlargement of the neck, with an abnormal thickness of the skin in this region, which often has a wrinkled appearance.

The hoofs are frequently under-developed, being thin-walled, short and brittle.

In general, it may be said that no matter how well balanced the diet, no matter what the combination of concentrates and roughage, experience would indicate that the condition developed unless there is sufficient iodine present in the ration. The deficiency of iodine in the feed is usually referable to a similar deficiency in the soil. The condition can be practically eliminated by feeding the brood sows iodine in the food which is usually given in the form of potassium iodide. We have observed the condition in one instance where the sow was being fed garbage. Even such a variety of food elements as is usually contained in garbage, was not sufficient to prevent the trouble in absence of sufficient iodine. One-sixth to one-third of an ounce of potassium iodide to each 100 pounds of feed will prevent hairless pigs, according to Hart and Steenboch, of the Wisconsin Agricultural Experiment Station.

Although the losses from this condition have been heaviest among swine, similar losses occur among sheep, cattle, horses, goats and dogs. Pigs born in March and April are more frequently affected than those born in May and June. It is reported that fall litters are usually normal, even in the districts where losses are heavy in spring farrowings. Fetalathyrosis is most prevalent in those cases where the gestation period extends over the winter months, where the pregnant animals are closely confined, and where the rations are lacking in green food. High protein diets during pregnancy seem to have an important bearing on the disease. Diets producing rapid growth tend to exhaust the foetal thyroid of its active secretion, the material thyroid seeming to be affected to a much lesser degree.

BLACK TONGUE (SORE MOUTH) IN DOGS

The etiology of this disease has long been a mystery to veterinary pathologists, and the existence of the disease throughout the southern United States has long been a source of much trouble to the southern veterinary practitioner. For a long time believed to be infectious, this theory has lost much ground, mainly on account of the uniformly unsuccessful efforts to transmit the disease by every manner of artificial inoculation. The very latest information available would point rather to the disease being due to a dietary deficiency.

Chittenden and Underhill fed dogs a restricted diet, one that later proved to be deficient in the fat-soluble vitamin. In from 2 to 8 months the dogs developed typical soremouth and skin changes very suggestive of pellagra in man. In these experiments the diet was composed of boiled peas, cracker meal, and cottonseed oil. The condition was produced also, but with greater difficulty, when meat was substituted for the peas, and lard for the cottonseed oil.

In April, 1916, Dr. T. N. Spencer, a veterinarian, at Concord, N. C., called attention to the similarity existing between black tongue in dogs and pellagra in man. Dr. C. A. Cary,

NOT POSED FOR THE CAMERA

A snapshot taken off Fleet Street, London, showing that motor vehicles are not displacing the horse across the Atlantic.

of Auburn, Ala., in 1920, classed "black tongue" as a deficiency disease and pointed out the similarity of the clinical manifestations of the dog disease and human pellagra.

In commenting upon the probable identity of the Chittenden-Underhill pellagra-like syndrome in dogs and clinical "black tongue", Wheeler, Goldberger and Blackstock, in a recent report from the United States Public Health Service, conclude as follows:

"The resemblance of black tongue to the experimental condition described by Chittenden and Underhill is so striking that it appears to us well-nigh certain that the two are identical; but before this identity can be accepted as definitely established, much additional work will have to be done. The possibility, if not the probability, that black tongue in dogs may prove to be the analogue of pellagra in man emphasizes the importance of such further investigations. In this the individual practitioner can take an important part by observing and recording the circumstances of the occurrence of this interesting condition in dogs and the efficacy of a strictly dietary treatment consisting of milk, eggs, and fresh meat."

KENNEL LAMENESS IN DOGS

Quite recently Brimhall and Hardenburgh, of the Mayo Foundation, have called attention to a condition occurring spontaneously among mature dogs, clinically and pathologically resembling osteomalacia more closely than any other known condition. The authors were of the opinion that the disturbance is nutritional in character, and in many respects resembles conditions which are found in animals used for experimental studies of certain vitamin deficiencies. That the condition is not rachitic seems to be borne out by the fact that it occurs exclusively in mature dogs.

Brimhall and Hardenbergh observed that except in the very early stages, rather large quantities of meat must be fed, over a considerable time before a cure is effected. They believe that meat, in this case horse-flesh, contains something of benefit, but only in small quantities, and some other article of food must supplement the meat. However, they bring out the very important point, which is not emphasized often enough, that the dog is primarily a carnivorous animal, and that meat, judiciously fed, is not harmful, and is an essential part of his diet.

SCURVY IN GUINEA-PIGS

There is a marked similarity in scurvy as observed in man and in the guinea-pig. That scurvy is a nutritional deficiency disease has been known since 1907, when Holst and Frolich demonstrated that the condition could be produced experimentally in guinea-pigs by feeding diets deficient in certain nutritive substances which we now call antiscorbutic vitamin C. More recent investigations have seemed to clear up the pathogenesis of scurvy. Findlay has shown that when vitamin C is absent from the diet there is an interference with the nutrition of the capillary endolthelium.

We are now able to account for the more prominent pathological alteration in scurvy, the hemorrhages into the tissues. With the nutrition of the capillary endothelium disturbed, these cells undergo degenerative changes, become swollen and interfere with the passage of the blood through the capillaries. There is consequently congestion in these parts, transudation of fluid through the walls of these diseased blood-vessels, and as the pathological process advances and the capillary walls become weaker, these allow the passage of red blood corpuscles into the surrounding tissues, and we have the familiar hemorrhages of scurvy, seen most frequently involving the knee and elbow joints in the guinea-pig.

LOIN DISEASE

A disease of cattle occurring in the central region of Texas has been recently described by Kinsley. The origin of the disease is unknown. The disease is characterized by a slight indisposition which may pass unnoticed except by an experienced cattleman. This is followed by incoordination evidenced by a staggering gait. This may last for several days and recovery follow a very mild attack, or the animals more severely affected may fall to the ground and be unable to rise. Paralysis appears to affect the loin muscles in particular whence the name "Loin Disease". The motor paralysis extends forward involving the neck muscles. There is loss of appetite with cessation of rumination although the affected animal will be able to drink water, there being no loss of power in the muscles of deglutition. Temperature, respiration and pulse are often normal. It has been suggested that the condition is a deficiency disease. Just what the missing element or elements are has not been determined. Moreover, there are several conditions connected with this disease that are not characteristic of dietary deficiency diseases.

CREEPING SICKNESS

Another disease of cattle described by Cary recently has been suggested as being a deficiency disease. It occurs in Southern Alabama.

(Please trun to page 00)

A Broader Conception of the Veterinary Profession

By L. B. Ernest, Tuberculosis Eradication Division, U. S. Bureau of Animal Industry.

THE editorial department of VETERINARY MEDICINE for March, 1923, contained two articles entitled "Where We Belong in the World's Work" (page 212) and "Behind the Breakfast Plate" (page 219) which seem to be based upon a strenuous objection to the inclusion in the work of the veterinary profession of any phase of activity pertaining to public health service, and especially to the public health phase of the cooperative tuberculosis-eradication movement. These articles give the impression that the editor takes exception to veterinary participation in public health work on the following grounds:

First, that we as a profession receive our livelihood from the livestock industry, which is the foundation of agriculture, and that we should therefore "soft pedal" any knowledge which might in any way reflect in an unfavorable manner upon that industry. The editor fears that considerable harm has been done by giving out facts regarding the possible ill effects of poor milk from diseased cows. The motion picture "Out of the Shadows" comes in for condemnation here.

Second, that the job of the veterinarians is to help the agriculturist produce healthy animals and to dispose of their products for as many **dollars and cents** as possible. In other words, we work for the agricultural interests alone, and not for the protection of the consumer of agricultural products or in the interest of the public health.

Third, that we are discriminating as a profession against the bovine species of animals, because we have not advertised that horses and dogs, which species are subject to such diseases as glanders and rabies, might also be disseminators of disease to the human family. In the case of the cow, the publishing of the fact that her products might become dangerous for human consumption is considered as discrimination.

In brief, it appears that the writer of these articles believes that any injection of veterinary service into any phase of public health is going outside of the realm of veterinary practice.

Thinks Us Narrow and Selfish

These articles are rather a severe arraignment not only of the campaign for tuberculosis eradication but also of the individual activities of many members of the profession. The views expressed are contrary to those held by a large proportion of the profession, including, it is not too much to claim, the more advanced and progressive elements. The editor's conception of the functions of the veterinary profession impresses many of us as being entirely too narrow and selfish and as ignoring the public spirit and the desire to serve humanity that should characterize any body of men who aspire to the dignity of being classed as a profession. The articles call for discussion for the purpose of ascertaining the facts and bringing out the opinions not only of veterinarians but also of others interested in the livestock industry outside of the profession itself.

Concerning the first of the points enumerated, namely, the intimation that the livestock interests are being hurt by calling a spade a spade as it refers to the production of dirty or disease-laden milk, the following table may be of interest:

Total Production of Milk and Per Capita Consumption of Whole Milk in the United States

Year	Gallons Produced	Gallons Consumed Per Capita for Household Use
1917	9,838,604,651	42
1918	10,221,627,911	44
1919	10,471,860,470	43
1920	10,425,232,560	43
1921	11,495,613,490	49

The figures in the table are given for the years since the organization of the tuberculosis-eradication campaign. They show a marked and steady increase not only in the production of milk in the United States but also in the per capita consumption, despite the fact that the period covers part of that of the world war when much of the product went into manufactured products for war purposes.

Defends "Out of the Shadows"

The criticism of the motion picture "Out of the Shadows" is the first unfavorable comment of this film that has come to our attention. This picture was produced for the purpose of furthering the tuberculosis-eradication campaign. Before production it was submitted to and approved by the United States public health service.

Twenty-nine of these films belonging to the U. S. department of agriculture and available

for loan are in constant use and are booked ahead, while 49 other copies were sold to outside agencies and are also being used extensively. This picture has been shown to approximately 5,000,000 people in practically every State in the United States. The demands for it have not lessened, and, strange to relate, agricultural interests, including the livestock owners themselves, are very much impressed with its value.

The writer believes that nothing is to be gained by the profession as a whole by attempting to conceal the ill effects of unwholesome milk and the lack of proper sanitation upon the farms, or the danger from milk infected with bovine tuberculosis. The frank and open recognition of such things will become a part of veterinary practice when the best of service is being rendered.

Admits Meat Inspection Belongs to Agriculture

Regarding the second of the points mentioned the writer takes issue with the editor's statements to the effect that the veterinarian's work in food inspection is purely for the benefit of the agricultural interests and not for the benefit of the public health. Such a conception is not justified by the facts. It is a matter of history that the principal motive back of the passage of the present Federal meat inspection law was the protection of the consumer's health. It is true that the administration of this law is placed in the department of agriculture and that the service is properly regarded as a task for the veterinary profession. Far from indicating that the inspection is a selfish job for the benefit of the agricultural interests, however, this means that the nation has committed to the veterinary profession a trust and a duty of safeguarding the public health through the meat inspection. If we take the narrow view advocated by the editor we shall be recreant to that trust.

Challenges Our Philosophy

Employees of the department of agriculture are paid by the public and are the servants of the whole nation and not merely of one class in a limited and selfish sense. The editor's philosophy, if applied to government functions generally, would mean that the public health service is designed for the advancement of the selfish interests of physicians and druggists rather than for safeguarding human health; that the treasury department is to serve the banking interests; that the army and the navy are created to promote the interests of munitions manufacturers and shipbuilders rather than for the safety of the nation, and so on.

Lofty Thought But Not Practical in 1923

Agriculture itself, in fact, does not exist merely for the purpose of bringing profit to the farmer, but has its highest justification in providing food and comfort for the human race. Food should be wholesome not only for the profit of the producer but for the good of the consumer. And so, while the veterinarian is concerned primarily with the health of animals, his concern goes beyond the welfare of the animals themselves and the profits of their owners, and extends to the real objects for which the animals are raised—the service of mankind.

Says Veterinarian Not a Mere Referee

Veterinarians engaged in inspection work for health departments are certainly responsible to the public. Any attempt to class them as "mere referees" is a shirking of responsibility. Further, it would be impossible for such veterinary employees to exercise the "versatility" recommended without the assumption of authority in conducting the work for which they are paid and without a knowledge of the transmissibility of animal diseases, even though that knowledge is obtained "second hand" from the medical profession. As a matter of fact, is not the greater part of the knowledge of any scientific worker obtained in a like manner? No sharp distinction can be drawn, however, between the fields of the medical and veterinary professions with regard to knowledge of diseases transmissible from animals to man. Comparative pathology concerns both professions.

Compliments the Veterinarian

It often happens that the veterinarian is a better authority than the physician regarding the danger to man from infections of animal origin. The editor ignores the important part taken by veterinarians in original scientific research and in contributing to the common fund of medical knowledge rather than merely drawing from it.

Regarding the third of the general indictments by the editor, it is hard to reconcile his comparison of the diseases of horses and dogs which are transmissible to the human family with diseases of the cow which are likewise transmissible. Horses and dogs do not furnish meat or milk for human consumption. The comparison, therefore, is not sound.

There is no doubt that the milk problem, which is intimately connected with the question of public health, is a major consideration in

veterinary practice, and unless a veterinarian is prepared to discuss all of the phases of agriculture including milk production with interested individuals, the value and importance of veterinary service will never be fully recognized. Instead of waiting for agriculture to "cultivate a better acquaintance and a closer and more friendly relation" with the veterinary profession, the profession should, by reason of its activity and fitness for service, demonstrate its value to agriculture.

Let us see what the statistics show regarding the thought that the livestock industry is hurt by the veterinarian's participation in health activities. In the Journal of the American Veterinary Medical Association for October, 1922, an article entitled "Tuberculosis Eradication Stimulates Dairying" gives the following information:

But The National Dairy Council May Have Helped a Little

During the period from July 1, 1917, to July 1, 1922, 175,000 tuberculous cows were destroyed. Instead of a milk shortage due to this there was shown to be a remarkable increase both in production and consumption of milk and dairy products. During 1921 milk production in the United States aggregated nearly 99 billion pounds, a noteworthy gain over 1920. The production of butterfat likewise increased. In 1921 alone milk cows increased 341,000, a figure nearly twice as great as the slaughter of tuberculous cattle during the preceding five years. This article further states that several hundred towns issued regulations requiring the tuberculin testing of cattle, the health authorities of these municipalities apparently being inspired with faith in the safety and value of milk as a food.

Here We Agree: Tuberculosis Eradication Naturally Forces Itself Into Helpful Programs

I fail to find in any of the literature pertaining to tuberculosis-eradication campaign any destructive criticism of the milk supply of the nation. In fact it has been repeatedly stated and published that so far as the public health phase of bovine tuberculosis work is concerned, all activity in that direction has been more or less forced into the program. The knowledge which the editor says is so common regarding the transmissibility of diseases has forced many questions regarding this transmissibility upon veterinarians engaged in the work, who either must answer such questions intelligently and furnish necessary data when required, or confess that the veterinary profession is not interested in the public health or is ignorant of that phase of the subject, and thus deny one of the greatest advantages of our calling.

Quotes Ousley

Let us see what a distinguished representative of agriculture has to say. At the annual meeting of the American Veterinary Medical Association at Saint Louis, Missouri, in 1922, Hon. Clarence Ousley delivered a notable address on "The Veterinarian's Relation to Agriculture." Every veterinarian who has not had the opportunity of reading this address should secure a copy, as it portrays in a wonderful manner the opportunity presented to veterinarians to advance not only their material welfare but also to render direct beneficial service to agriculture and the public in general. Col. Ousley said: "No professional or commercial activity deserves success if its major motive is not the sense of service. The wholly selfish life

PATYRUS WINS ENGLISH CLASSIC

For the third time in succession Jockey Stave Donohue wins the English Derby. He rode S. Humorist to victory in 1921, Captain Cuttle in 1922 and Patyrus in 1923, and thus becomes entitled to wear the golden spur.

is bestial. It can not be even truly honest, for its entire point of view is the animal instinct to get, to take, to seize, without giving adequate return. * * * * To render true service to agriculture and to receive adequate compensation is the formula of veterinary practice."

Col. Ousley further states that "the first veterinarians were 'hoss doctors,' and the profession was improved by the endeavors of those who had the vision and industry to exalt their calling." It may be added that a modest participation in public health activities, in cooperation with the proper medical health authorities and livestock owners, can have no other tendency than to exalt the veterinary calling, as such service is entirely within the lines of true service to agriculture.

Col. Ousley also said: "After all, a veterinarian is something of a missionary, and he is warranted in doing something more than sitting on his dignity and awaiting calls from an uninformed populace. * * * * The veterinarian is the instrument of the conservation of animal values, and that makes him an economic factor of tremendous consequence. But most animals are food, and flesh is subject to subtle disease. Therefore, the veterinarian is also a conservator of human health. Thus in a large way the veterinarian is a vital part of the whole machinery of economic and social welfare." These thoughts, coming from a man so closely allied with the agricultural interests of America, are well worthy of consideration.

This Source of Annunciation Commendable

Another standard authority on agriculture, Dr. H. L. Russell, Dean of the Wisconsin College of Agriculture, in an article in Hoard's Dairyman of March 23 entitled "What Animal Disease Control Means to the Future of Dairying," says:

"Tuberculosis milk affects the child. Time does not here permit a consideration of the health aspects of the whole problem from the point of view of transmitting the disease to the human family, but important as is the economic aspect, we must not lose sight of the fact that fluid milk, in particular from tuberculosus sources, possesses an element of danger that is peculiarly marked in the case of children. * * * * Cities protect themselves from this menace by the passage of pasteurizing ordinances which insure the safe treatment of their milk supplies. Meanwhile, many a dairyman supplying these cities has gone blindly on, oblivious of this menace, satisfied to let the city protect itself, but negligent of his own interest, which aside from the milk he consumes in his own family is primarily economic. Such a foundation is not on solid rock but sand. Some day the floods will come and the winds will blow and beat upon that house; and for him, at least, great will be the fall thereof."

Sorry If It Does

The editor's thesis really strikes at the morale of the profession. If the veterinary inspector, for example, accepts the idea that his work is merely to help the stock raiser to market his products to advantage, and that it does not matter whether the inspection affords any real protection to the consumer, his inspection will tend to become a mere formality and there will be little incentive to careful and conscientious effort. The editor's conception, if the present writer understands it correctly, would be deadening to aspiration and ambition of the finer sort.

Just a Matter of Opinion

It would relegate the veterinary profession to an unimportant place in the professional and scientific world, and would largely destroy the incentive to progress and public-spirited service. The profession has taken a creditable and leading part in great movements for sanitary improvement. Shall it now retreat from that position and content itself with a minor role in such movements in the future?

The writer believes that if the veterinary profession is to attain its highest ideals its members must not confine their knowledge or activity to the simple dispensation of drugs or the application of surgery or the control of a few animal diseases, but must broaden their knowledge to include many other phases of agricultural activity which pertains to veterinary science. The writer believes that the educated veterinarian of the future will be the principal sanitarian of the future. This can not be avoided except through a total lack of preparedness and a refusal to assume responsibility.

Comment: Deleted of the lofty excursion into the realm of altruism, the above article only confirms the position VETERINARY MEDICINE has always taken in regards to "Where we belong in the world's work." The author like all veterinarians wants the meat-inspection service to stay where it belongs—in the agricultural department, and we are proud of always having marshalled whatever moral and material support we could to keep it there. However, if the unsolicited public health activities on the part of veterinarians we now

decry are having such an uplifting influence as the author claims we could then be pardoned for taking an opposite view, because we want to uplift if we can. But this we shall not do because we too firmly believe that the veterinarian is an expert on the health of animals only.

Then, the author justifies the exhibition of "Out of the the Shadows" on the grounds that it is approved by the public health service. We oppose it because the public health service so naively lets us do the exhibiting, and also because it does not tell the truth.

The editorial pages of VETERINARY MEDICINE bear witness of its attitude toward tuberculosis eradication. Nothing promotional in character is ever intentionally omitted, but we can not get ourselves into the mood of admitting that the now famous Mary, a girl approaching 20 years of age, contracted pulmonary tuberculosis from her pet Jersey.

We believe that tuberculosis eradication must stand unequivocably on its merits, on scientific truths, on the economic advantages it holds out to the livestock industry. We base this belief on the poor showing made when human health was held out as its main objective and compare this with the progress now being made under the accredited herd plan, the initial impetus of which was purely commercial.

The charge that we are narrow and selfish we take good naturedly because these are such common human faults; as common as broadness of mind is rare.

And besides, we take solace in the words of a great philosopher who said "To avoid unkind criticism, say nothing, do nothing, be nothing."

A correspondent from southern Illinois writes that during the days following the exhibition of the film, "Out of the Shadows," at a local theater, the sale of milk dropped to such an extent that the dairymen of the district were compelled to issue a circular featuring the value of milk as a food in order to retrieve the loss.

It requires 350,000 cows to supply the population of Chicago with milk. If these were stood side by side in stanchions the row would reach from Chicago to Kansas City.

PIETERTJE OF THE UNIVERSITY OF CALIFORNIA

Pietertje has just made an annual record of 28,235 pounds of milk testing 1,000.4 pounds of butter fat at the university farm, Davis, California. Readers who know Holstein-Fresians are requested to criticize her conformation. She is a fine individual but is not perfect. What are her weak points as a breeder?

Live Stock Poisoning

Edited by L. H. Pammel, Ph.D. Professor of Botany, Iowa State College, Ames, Ia.

JABORANDI POISONING

It has been shown by several investigators that several species of shrubby jaborandi (Pilocarpus) found in the West Indies and South America are poisonous to livestock. The *Pilocarpus heterophyllus* of the West Indies was first collected by Wright and described by Dr. Asa Gray. This species is closely related to the "borrachera'" of Venezuela and when eaten by animals causes a sort of intoxication from which the plant derives its name. It induces profuse perspiration and salivation. A chemical study made by O. T. Black, J. W. Kelley and W. W. Stockberger shows that this plant contains pilocarpine and the poisonous effect on animals when eating the same is similar to that of the well known pilocarpine poisoning.—Am. Jour. of Pharmacy.

THREE SEEDED MERCURY POISONOUS

Dr. G. G. Graham of Jensen-Salsbery Laboratory of Kansas City sent to me a specimen of a three seeded mercury *(Acalypha neomexicana)* sent to him by Dr. D. S. Robertson, Camp Harry J. Jones, Douglas, Arizona. Dr. J. M. Greenman was kind enough to identify the plant for me. The three seeded mercury is a member of the spurge family to which the castor oil, croton, spurge and other poisonous plants belong. In my Manual of Poisonous Plants I listed the Mississippi Valley plant *(Acalypha virginica)* which was suspected of being poisonous. Several species of the genus are given as emetics but none given as strictly poisonous. I suspect however that some of the plants are poisonous. The case reported by Dr. Roberts is therefore of interest. Dr. Roberts describes the symptoms as follows.

Animals go down after drinking water, (no deaths have occurred any distance from the watering places) and appear in considerable distress, rapid breathing, temperature 105° to 108°, muscular twitching, with sudden jerking of the legs (similar to strychnine poisoning) heart weak and very rapid, in these observed before death 140 per minute, visible mucous membranes injured and a starry expression from the eye and unable to stand when put on their feet. Death occurs in from twenty-four to forty-six hours after first going down.

YOUNG COCKLEBURS POISONOUS TO SWINE

Professor A. A. Hansen of Purdue University sends the following letter and with it the contents of the stomach of hog which ate the cocklebur sprouts.

He writes:—"I am sorry you did not include something about the danger from cocklebur sprouts since I believe this is a real problem to farmers in the middle western states. Inclosed is a newspaper report, from the Lafayette Journal and Courier, of May 26th, 1923, containing some data along this line."

"In all cases of cocklebur poisoning that we have investigated the trouble occurred on wet land that had recently dried off, thus causing thousands of burs to sprout simultaneously.

"I am also inclosing a cocklebur sprout from the farm of Foster Hoffman, of Center Point, Indiana.

"The greatest handicap is the lack of this experimental work but we are overcoming this through cooperation with our veterinary department since Dr. Craig is glad to perform feeding experiments with poisonous plants. Right now we are working on cockleburs and believe we will get some good results. I do not believe that there is much doubt regarding the poisonous properties of cocklebur sprouts there is some experimental evidence on this subject."

The following item is taken from the Lafayette Courier.

Especially Dangerous to Young Pigs

"Cocklebur sprouts 3 inches or less in height are exceedingly poisonous to swine, especially to young pigs and a great deal of trouble from this source has been experienced n Indiana," says A. A. Hansen of the Purdue University agricultural extension department. "Cockleburs are now sprouting liberally and swine, sheep and cattle should be kept away from areas in which cocklebur seedlings occur in large numbers."

"A typical case of this character was recently investigated on the farm of Foster Hoffman of Centre Point, Clay county. Mr. Hoffman lost seven pigs and one gilt in a small hog lot from an unknown cause. An investigation revealed that the ground was literally

covered with thousands of cocklebur seedlings. Since the symptoms described by Mr. Hoffman were similar to the symptoms of cocklebur poisoning, there was little doubt as to the cause of the trouble. Poisoned animals usually throw back their heads in a peculiar fashion, kick spasmodically and occasionally become blind.

More Common When Wet Land Dries Up

"Danger from cocklebur poisoning seems to be greatest when wet land begins to dry during the spring because under such conditions many cocklebur seeds sprout simultaneously. The poison seems to leave the plants after they are a few inches high. The best remedy is to keep the animals off cocklebur infested land until the plants are a foot high. A cure for cocklebur poisoning that has been used with considerable success by an Indiana farmer is the use of a cupful of melted lard poured down the throat of every sick animal.

CRUSHED ROOTS POISON DRINKING WATER

[3]The Canadian Veterinary Record, Vol. 3, No. 1 and 2.

Dr. H. B. Sifton ([4]), of the department of botany of the Toronto university, publishes an account of Canadian plants injurious in pastures and on the range. It contains a brief account of a large number of plants which are recorded as injurious.

The article begins with the grass family, mentioning "corn stalk disease", a most convenient term a quarter of a century ago, but not so now. It is generally agreed that the trouble does not come from anything in corn, but is possibly an impaction. This disease, therefore, can hardly class corn as a poisonous plant. The author takes up the sorghum, porcupine and other grasses which produce mechanical injuries. Of the lilies death camas, swamp camas, false hellebore and swamp hellebore are described. Plants of other natural orders like the buttercup family, which contains the larkspur and aconite are described and discussed. There is a note stating that the Pasque flower, the beautiful early blooming plant of our prairies has caused death of sheep in Alberta. There is a discussion of the cherries and loco weeds, the laurels. The statement is made that animals are sometimes poisoned by drinking water which contains the roots crushed by their feet, and therefore the plant should be eradicated from about drinking places. Cattle frequently eat the roots in the spring with fatal results. There is a brief discussion of the Pictoru cattle disease caused by *Senecio Jacobaea.* The ragworts are rather common in the Mississippi valley but not the one described by the author. This is only common in the east and probably our stockmen in the west need not fear any of our species. This paper will be found most useful in giving a brief account of the more important poisonous plants of Canada.

ARE THE SEEDS OF PROSTRATE PIGWEED POISONOUS?

"Will you please identify this weed stating whether it is an annual or otherwise, where it is commonly found, and if it is native to northwest Iowa. Would also like to know if this weed is poisonous. If this seed is not poisonous, is it possible that it could have been poisoned?

"The reason for the above detailed information is because of the fact that it was found in a large quantity on a farmyard that was practically bare last year. Just recently this party's poultry has been dying off quite rapidly with no apparent sickness. In some cases hens were found dead on the nest while laying."—Iowa.

Reply by L. H. Pammel: I have no record of poisoning from the prostrate pig weed. In my Manual of Poisonous Plants the statement is made that the common pigweed did in one case in Nebraska cause bloat: quoting from this work "Mr. O'Gara calls attention to the injurious properties of the first species in Nebraska. He says that it doubtless causes a great deal of trouble in some parts of that state. Mr. C. C. Palmer near North Platte lost 5 head of cattle in his pasture. In all cases they were very much bloated and a postmortem examination revealed a good deal of pigweed in the stomachs.

Pigweed Causes Bloat

The animals in question had been accustomed to prairie grass pasture and broke into a field containing considerable of this pigweed, some Russian thistle and lamb's quarter. After the death of the animals the fence was replaced and no further trouble was noticed. An experiment with animals carried on by Mr. O'Gara proved negative. Many families in the vicinity of North Platte regard the weed as a bad bloater, by some considered as serious as green clover and alfalfa."

I find that several other species of the family contain saponin which is an injurious substance. Several plants of the family are used as a taeniafuge.

VITAMINS IN THE DIET

In recent years there has been much discussion of the subject of vitamin in Scientific Journals. Most of the important biochemical work on the subject has been done by the American biochemists. One of the most important investigators on the subject is Dr. E. V. McCollum formerly of the University of Wisconsin, now of Johns Hopkins University. Several nutritional diseases long baffled scientists until the discovery of vitamins as for instance the disease known as *beri-beri* common at one time among rice eating people. This was due to the consumption of a diet made up largely of polished rice, the rice being very deficient in vitamin. Birds fed on a diet with a deficiency of vitamin B. develop polyneuritis. Ralph B. Hoagland has published an interesting paper (U. S. Dept. Agr. 1138) on Vitamin B in the edible tissues of the ox, sheep and hog.

He says: "Considering the fact that practically all our knowledge concerning vitamins has been acquired only during the last decade, we have a very considerable amount of information regarding the values of the important foodstuffs in terms of vitamins A, B, and C. The data are far from sufficient, however, for the purpose of assigning other than tentative values to many of our staple food products. Meat for example, one of our most important food stuffs, has been assigned a rather low value as a source of the three vitamins; but a careful review of the literature indicates that only a limited number of investigations have been carried on to determine the vitamin content of this food, and that practically all the work has been done was with beef and horse meat. The validity of the work which has been done is not questioned, but it is too limited in amount to justify the statement that meat in general is poor in vitamins. Certain animal organs, on the other hand, particularly the heart, liver, and kidney, have been found to be relatively rich in the three vitamins.

"Additional information regarding the vitamin content of meat, which should include not only beef, but veal, mutton and lamb, and pork as well, is much to be desired, as well as data concerning the vitamin content of the edible organs and other tissues of the meat food animals. It is the purpose of this bulletin to report the results of investigations that have been carried on to determine the vitamin-B content of the voluntary muscle and the edible organs of the ox, sheep and hog."

The paper contains a large amount of most interesting and valuable data on the matter of the vitamins found in the animals experimented with. The author concludes with;

"Meat may be regarded as an important source of vitamin B in the diet. Pork in particular—that is, the lean meat—is rich in this vitamin, comparing favorably in this respect with liver and kidney, organs heretofore recognized as containing an abundance of vitamin B. Beef appears to contain a much smaller proportion of the vitamin, while mutton occupies an intermediate position.

"Several of the internal organs are particularly rich in vitamin B. The heart appears to be the richest in this vitamin, but the liver and kidneys have only slightly lower values. The other organs contain smaller quantities of the vitamin. The class of products is an important and economical source of vitamin B."

ERGOTISM

"Last year a client of mine had 20 head of cattle poisoned with Ergot which came from June grass smut. This hay land has a small amount of marsh grass, some red-top and the rest June grass. It was covered with water in the first week in June which stayed about 5 days. The hay looked fine but about 6 weeks after he started feeding some of the cattle went lame swelling in the metatarsal region in most cases in both hind legs, two cases showed a pneumonia in patches in both lungs, 3 cases lost a claw on foot, 4 cases lost end of tail, skin cracked in some parts of body, one cow due to calf in about 4 weeks became quite sick. The owner didn't pay much attention to her and she died in about 4 days with a dead foetus in an emphysematous condition. A complete change in feed gave good results with this one animal died and we destroyed one more that lost her claw which got infected. The others got along nicely. The medical treatment was only 23 Epsom salts twice daily in good feed with one gr. strychnia in solution 3 times a day in feed. * * * Three horses were fed this hay altogether without any signs of ergot poisoning."—Wisconsin.

Reply: From the description of the cases the trouble was due to ergot. This is not common on blue grass though it occurs at times. I have found it in Iowa. It is rather common and abundant on redtop. So far as I know, there is no smut on the heads of June or blue grass. There is sometimes a smut on the

leaves but I do not think smut caused the trouble. The time to cut the hay is just as it heads out. The cause of the trouble must be ascribed to ergot, and the disease caused by it is ergotism.

"COFFEE BEAN A POISONOUS PLANT"

Some years ago there was sent to me from South Carolina a specimen of coffee bean *(Sesbania platycarpa)*, with the statement that the plant was poisonous to cattle. This is a very different plant than the Kentucky coffee bean of the North. This plant is an annual and is common in the Gulf Coast region occurring in sandy soil. More recent studies have shown that the *Sebania Cavanillesii* has been placed in the genus Daubentonia and is known as the Daubentonia longifolia. It is interesting to note that *Sesbania* and *Daubentonia* are closely related to the Black locust (Robinia). These genera are closely related to the genus Astragalus and Oxytropis in which genera loco weeds occur. They are all members of the tribe Galegeae in which there are poisonous plants in other parts of the world. We may therefore expect the finding of other poisonous plants in this tribe.

This note of mine, I think, was one of the earliest records of the poisonous nature of the plant, which was noted in my Manual of Poisonous Plants. Evidently some of the same material reached Dr. Chestnut who thus commented on it. Dr. C. Dwight and Dr. A. B. Clawson now report that the Texas Coffee Bean *(Daubentonia longifolia)* is a poisonous plant. It was first reported by J. B. Reichy of Houston, Texas, who stated that a sheepman had lost several hundred sheep. This plant is a member of the pulse or legume family and is a shrub or small tree. It has pinnately compound leaves, the flowers are yellow or scarlet, the pods are, however, characteristic. They are oblong, compressed with four wings, and the seed is separated from each other by transverse partitions. The species occurs from Florida to northeastern Texas, to the Lower Rio Grande river. I have seen it quite common in southern Texas on sandy soil adjacent to streams. The experiments made by March and Clawson show beyond a doubt that the plant is poisonous and that the dried leaves as well as pods cause poisoning. In addition to this Dr. Dwight H. Bennett of the Texas Agricultural Experiment Station reports the loss of goats. Thus far no experiments have been made with cattle and horses.

The symptoms of poisoning are rapid pulse, sometimes weak and irregular labored respiration, rather high temperature in some cases, diarrhoea, and is characteristic for this plant. Death occurs with little or no struggle. The experiments also indicated that the toxic substance is excreted very slowly and that there is a cumulative effect.

TWO CASES OF COWBANE POISONING AT WALKER, IOWA

A short time ago one of our students Mr. W. J. Agnew came in to see me about some poisoning thought to have been caused by cowbane. The young man brought the fleshy roots to me and asked what they might be. I identified the plant as cowbane (*Cicuta maculata*) which is common in low grounds of Colorado, Wyoming, Montana to Utah, eastward to Florida and New Brunswick. A related species is common on the Pacific coast. It is the most deadly poisonous plant in North America, both to man and livestock. I hope it will not be considered out of place to publish an account of this case as described by a physician; Dr. C. L. Closson of Walker, Iowa.

"Walter and Ernest Lowry, aged 13 and 17 years respectively, plowed out some roots which they were told by Clinton Cherman, 73 years old, were artichokes. They each ate a piece about 3 in. long and about 1 in. in diameter. This happened about 4:30 or 5 o'clock April 19th. Upon their arrival at the farm yard Walter complained of severe nausea and in a few minutes fell to the ground in a convulsion. This was about 6:20 p. m.

"Ernest rode a horse to a nearby phone and called me and upon his arrival home he also fell in a convulsion which was the only one he had, but the younger lad suffered at least 10 convulsive seizures and was unconscious for six hours. I evacuated their stomachs and to this I believe they owe their lives. The following morning or so their stomachs would tolerate medicine. I gave them large doses of Magnesium Sulphate. They were unable to keep food for over 24 hours. In regard to their weight would say that Walter 13, weighs 110 lbs., and Ernest 17, about 135 lbs."

The poison is probably in the resinous substance found in the plant. There are no alkaloids. The substance cicutoxin has been found in one of the species. The cowbane is quite as poisonous to livestock as to human beings.

Swine Problems of 1923

By A. T. Kinsley, Associate Editor

THE pig loss throughout the central states has been extraordinarily large this season, due primarily to the inclement weather and lack of facilities on the part of the breeder, to properly protect the new born pigs. In some sections 50% of the spring-farrowed pigs perished. The loss in Iowa alone, according to reports, exceeds one million head. The losses were proportional in the Dakotas, Minnesota, Nebraska, Northern Kansas and Missouri.

Mammitis Resulted from Loss of Pigs

The loss of several, or, as in some instances, all of the pigs in one litter, was responsible for many cases of mammary disturbances. Failure of milking is the usual cause of catarrhal mammitis. This form of mammitis is not serious, providing it is properly treated in the beginning. If the affected sows are not cared for promptly the condition becomes more severe and not infrequently results in destruction of the gland and end fatally. Numerous sows that lost their pigs were given no attention and many of them will be bred for fall farrowing unless the breeders are advised of the probable consequences. Because of the excessive loss of the spring pigs there will be more sows than usual bred for fall farrowing to offset the spring losses.

Veterinarians will do a good service by suggesting that those which lost their pigs be carefully examined. Those evidencing damaged mammary glands should be fattened for market. The breeding of the sows with defective udders is almost certain to result in excessive losses of the fall farrow from scour induced by digestive disorders.

Scour in Pigs Prevalent

The conditions that caused such extensive pig losses during the early spring months this season also favored the occurrence of scour. There is apparently no single cause that is responsible for the various cases of scour. Unfavorable surroundings, damp, dark and dingy hog houses, improper diet of the sow and diseased mammary glands are important predisposing factors. The pig having been predisposed various microbian agents become active and are the principal factors as the disease develops.

Scour usually occurs in relatively young pigs, although it may affect pigs up to six weeks of age.

Further Losses from Necrotic Enteritis

Conditions at the present time favor the development of necrotic enteritis. This disease is most common in 30 to 50 pound pigs and particularly in those that have been affected with scour or predisposed by undue exposure to muddy pens and damp sleeping quarters. The present indications are that necrotic enteritis will be quite widespread unless measures are taken to place it under control. The symptoms of this disease are of little value as a guide or indicator of the extent of the lesions. In some cases the lesions are extensive and the symptoms almost negligible while in other cases that show aggravated symptoms, the lesion may be scarcely describable on autopsy. Again the disease may be rapidly fatal in some cases and prolonged and rarely fatal in other cases. Usually the first symptom noted is depression. The affected animals have a variable appetite and more or less digestive disturbance which is usually manifested by diarrhoea. In the subacute or chronic form of the disease the affected swine appear unthrifty and gradually become emaciated, although they may be consuming about the normal quantity of wholesome and nourishing food.

Diet Important in Controlling Enteritis

Provision of a proper diet is of first importance in controlling necrotic enteritis. Affected swine should be given a slop diet only. They should not be given tankage or allied products. It has been demonstrated that sour milk or buttermilk products are of value as a food or drink in this disease. The ration for affected swine should not be more than one-half that provided for healthy swine. It is advisable to admix some intestinal antiseptic with the slop. Copper sulphate is said to be of special value in these cases, the dose varying from one-half to one drachm daily, depending upon the size of the hog. Many practitioners have used Mixed Bacterin in affected herds. According to reports, the bacterin is of value in diminishing the resistance of the non-infected and slightly infected swine.

Conditions Favor "Bull Nose"

Bull nose, sniffles, or infectious rhinitis has been quite persistent particularly on those farms on which the same hog lots have been maintained for several years.

The B. pyocyaneus has been incriminated as the cause of this disease; however, it is probable that predisposing factors such as unsanitary lots and inbreeding are important in its occurrence.

Persistent sneezing and a constant desire to root are the initial symptoms of this disease. The affected pigs soon become gaunt and unthrifty and there is soon more or less deformity of the nasal and facial bones.

Treatment of bull nose has not been satisfactory excepting in those cases that have been treated in the very early stages by inhalation medication. The disease can be quite largely prevented by yearly rotation of hog lots and the discontinuation of inbreeding.

Rainy Season Conducive to Parasitism

The hatching of parasite ova and the maintenance of the embryo are dependent upon ample moisture. Muddy hog lots are therefore ideal for facilitating parasitism. The natural conditions under which swine are kept favor parasitism and extra efforts should be exerted to protect the already reduced pig crop from losses due to parasitic infestation. The greatest loss of swine from parasites is caused by the ascarids.

The eradication of any parasite or control of parasitism is dependent upon a knowledge of the life cycle of the causative parasite. Ascarid infestation can be controlled by rotation of hog lots; worming out brood sows about the time of breeding; keeping the brood sows after the above treatment on virgin soil; thorough cleaning the brood sow with soap and water about ten days before farrowing pen that has not been previously occupied by swine or in a farrowing house that has been thoroughly cleaned with hot water and lye and preventing the farrowed pigs from running in lots that have been occupied by swine until they are at least six weeks of age.

Vaccinate Spring Pigs to Prevent Cholera

There is more or less cholera throughout the states in the corn belt and practitioners will be doing a good service by advising the early vaccination of the spring pigs. It will be economical for the owner to have his pigs vaccinated soon after weaning because it will require a relatively small quantity of serum.

The method of administration of serum and virus has been discussed pro and con for the last several years and, no doubt, most practitioners have some established procedure that they follow. According to available information it is evident that the intraperitoneal method is simple and desirable in pigs. Serum injected into the peritoneal cavity is rapidly absorbed, does not cause soreness or difficulty in locomotion, and does not damage the hams or shoulders. This method is especially advantageous in 40 to 60 pound pigs for an attendant holding them by the hind legs favors the descent of the viscera and there is little or no danger of puncturing any of the visceral organs. The same precautions as to cleanliness and asepsis should be taken in making intraperitoneal injections that are observed in the injections into the axillary space or the ham. Virus should not be injected into the peritoneal cavity. Serum injected intraperitoneally should be about body temperature for cold serum may cause distress from shock.

The foregoing briefly indicates some of the conditions that cause losses of swine. The problems incident to successful swine production are of vital concern to the breeder and feeder. Practitioners have the key to the situation in their respective communities and those that are broadcasting information that will enable their clients to diminish the losses that threatened their existence, are doing a noble deed and no doubt are being rewarded.

METRITIS COMMON IN SOWS

This condition is much more common in sows than is ordinarily suspected. Metritis in swine has not received the consideration that it has in cattle although it is of prime importance. From the available literature and the findings in field investigations it appears justifiable to pathologically classify porcine metritis as catarrhal, purulent and septic. This classification is suggested for convenience in describing the conditions that have been observed and it is possible that some other classification would serve the purpose.

Follows Abortion

Metritis in sows is usually a sequel of abortion or difficult parturition although the condition has been observed in sows in which parturition was apparently normal. Some gilts have been observed that showed marked evidence of metritis and this condition has been demonstrated by autopsy in several gilts from a herd in which there had been rather extensive loss of pigs due to uterine infections.

Combination of Micro-Organisms Found

A variety of micro-organisms have been incriminated as causative factors because they have been isolated from uterine discharges

and from the diseased tissue. It is probable that metritis may be caused by one particular kind of bacteria but in most cases there is a combination of two or more organisms. Pyogenic cocci, B. abortus and representatives of the colon typhoid group are the most common bacterial invaders in cases of metritis. Some other microbian invaders have been isolated but probably are not causative factors.

Symptoms

Catarrhal metritis is of common occurrence and may be acute or chronic. This condition is manifested by a mucous or a mucopurulent vaginal discharge. The affected animal will appear unthrifty and may not conceive. In the early stages the external genitals may appear swollen. This is the type of metritis that has been observed in gilts.

Purulent metritis is manifested by a purulent vaginal discharge. There is a diminished appetite and usually a marked rise of temperature. The peritoneum may become involved and the patient will then evidence pain when forced to move. This type of metritis is characterized by an intense inflammation of the uterine walls and there may be quantities of pus accumulated in the uterine cavity. The uterine walls will be thickened due to leucocytic infiltration. The infection and the inflammatory process may extend and involve the peritoneum.

Septic metritis has a sudden onset. The affected animal will present a tucked up appearance and refuse all feed but they may drink extraordinary quantities of water. The temperature in these cases is unusually high and respiration is increased proportionately. This type of metritis is characterized by an intense inflammation of the uterine walls with an accompanying necrosis. The uterine cavity will contain quantities of a putrid fluid and the uterine mucosa may have sloughed or appear as a macerated yellowish mass.

There is usually thrombic formation in the uterine veins and the diseased process may extend and involve the fallopian tubes and ovaries. The peritoneum usually becomes involved and if the patient lives sufficiently long metastasis and thrombic formation may occur in any part of the body.

Catarrhal metritis is a relatively mild affection, is usually chronic, and rarely fatal although it may terminate in permanent sterility. Purulent metritis is a severe febrile disturbance and is fatal in a large percent of the cases that are not properly treated. Septic metritis is sthenic and destructive. This type of metritis is usually associated with dystskia and particularly those cases that have an extensive uterine infection prior to parturition.

Metritis Difficult to Treat

The treatment of porcine metritis has not been entirely satisfactory. Local treatment is most applicable in such cases but the small size of genital organs makes this form of treatment difficult. A horse catheter may be used for this purpose as it can be passed into the uterine cavity. The use of a dilute solution of tincture of iodin or grain alcohol has given favorable results. Care should be exercised when iodin solutions or other antiseptics are used as douches that the fluids are all drained out before leaving the patient. Quinin bisulphate in 20 grain doses injected subcutaneously into the axillary space three times daily has been reported to be of value in cases of septic metritis.

NECROTIC DERMATITIS IN A HERD OF SWINE

History

The following condition developed in a herd of pure-bred swine in eastern Missouri. There were 99 head of hogs, some 60 of which were fall pigs. These hogs were probably all immune to cholera as they had been treated with the serum and virus, the fall pigs having been treated about the 10th of December. On the evening of December 28, the owner noted that some of the fall pigs were sick and acting unusual. On a closer investigation, he found that they had nodules on the skin. Some of these shoats refused to eat. Between the dates of December 28 and January 3, eighteen of the affected hogs died, the most of which died on December 31 and January 1.

Symptoms

The hogs were inspected by Dr. C. M. Dowell, January 2. He noted the following symptoms: Rise of temperature, in some instances the temperature being as high as 106°F. By careful examination of the shoats affected it was found that the skin was literally covered with necrotic areas which varied in size from a mere point to areas half an inch in diameter. In the beginning these lesions were indicated by a red spot, according to the owner's statement. Within a few hours, they became bluish and later gray and seemingly protruded from the surface. Within 24 to 36 hours these centers became necrotic. By incizing the necrotic centers, it was found that there were

accumulations of the dead cutaneous tissues that appeared like typical lesions of necrobacillosis.

Autopsy

One of the pigs most severely affected was destroyed for autopsy purposes. There was no evidence of any diseased condition found in any of the internal organs, although an examination of some dead pigs two or three days earlier revealed a severe hemorrhage in the stomach from erosion of the gastric mucosa. The eroded area was apparently a lesion of the Actinomyces necrophorus (B. necrophorus.)

It was recommended that the premises be cleaned of all rubbish and trash and that the pens be scrubbed with a hot solution of lye and that all affected pigs be hand dressed, using a stiff brush to remove the necrotic masses or scabs. The eroded areas were treated by the local application of tincture of iodine.

VETERINARY MEDICINE will be glad to have further suggestions from its readers, as to the methods that are most reliable in controlling and relieving this condition, also if there is any question as to diagnosis, to publish other discussions on this problem.—A. T. K.

GLANDULAR EXTRACT TREATMENT—PRACTICAL RESULTS

By J. F. Shigley, Associate Editor

Glandular therapy is a very important subject at the present time and is receiving a great deal of attention. Its value in the treatment of various animal diseases is beginning to receive general recognition and there is little doubt but that within a reasonable length of time glandular preparations will be used as extensively in veterinary medicine as in human medicine.

It is an old truth that therapeutic preparations which possess merit and which are of value, ultimately succeed; while those which are of doubtful value and lack in specific action, ultimately become discarded.

The subject is one of the most interesting and fascinating of studies. In many respects it is unlike other studies in veterinary or human therapeutics. The nature of the disorders, for which they are indicated, and the general character of the preparations themselves have rendered it extremely difficult to carry out laboratory procedures affording definite, clear-cut results. On the other hand, their use in the field under practical conditions affords valuable data and undisputable evidence that in those cases where certain glandular preparations are indicated, successful results follow.

The following case reports are of interest, especially in connection with breeding problems, which today are of great importance to the veterinarian:

Dogs

An Irish Setter bitch had constantly failed to breed. The animal was apparently in a normal condition, other than some indications of lack of activity of the sexual maturity group of endocrinous glands. This bitch did not appear to come into heat in an active normal manner although the heat periods were more or less regular. She had never become pregnant.

During the month of March this animal was treated with subcutaneous injections of a properly balanced mixture of the sexual maturity gland group. On April 3, 1923, the bitch was bred and on May 12th after careful examination, showed pregnancy.

Swine

Gilt, one year of age, came in heat regularly but failed to conceive. During the period from April 1st to April 12th, this animal was treated subcutaneously with small doses of a properly balanced mixture of extracts of the pregnancy group of endocrinous glands.

As there were apparently no evidences of anatomical abnormalities or other anomoalies, it appeared that failure to breed this animal, was due to lack of activity of the pregnancy group, with possible hyper-activity of the sexual maturity group. After treatment with the extract of the pregnancy gland group, this gilt was bred and on May 15th was reported by the veterinarian in charge as "safe with pig".

The foregoing reports furnish substantial evidences as to the value of glandular therapy in the treatment of breeding disorders, which arise in veterinary practice.

Dr. R. B. Love, Springfield, Mo., makes the following statement: "This litter of puppies has changed the price of the bitch (Peggy S) from seventy-five dollars, six months ago, to three hundred dollars today, so you see why I think well of the treatment."

Prof. Guyer of the University of Wisconsin, has been conducting a series of experiments to determine whether or not there is an hereditary immunity to disease. In these experiments successive generations of rabbits were inoculated with typhoid bacilli and it was found that rabbits of the fourth or fifth generation were much more resistant than those that were first inoculated.

The Army Veterinary Service

One of the paragraphs of the federal constitution contains the very best reason why you should join the veterinary officers' reserve corps. It reads, "To provide for the common defense, etc."

ENLIST NOW

Cook county, Illinois, which includes Chicago, has over 200 officers in the Medical Officers Reserve Corps. The same district has only four officers in the Veterinary Officers Reserve Corps. This is not as it should be. Veterinarians should fall in with the spirit of the hour much faster.

Although veterinarians are enlisting in increasing numbers since VETERINARY MEDICINE began a promotional program in behalf of national defense, there is still much to be desired in regards to the number of applicants.

Two-weeks' optional training a year with the pay and allowances of your rank, the improved standing it will give you locally, the benefit that will accrue to the standing veterinary profession, and the nation's need of your brawn and brains, are among the reasons every able-bodied veterinarian should send in his application. Send it to VETERINARY MEDICINE, 1827 South Wabash avenue, Chicago. Blanks and instructions will be promptly supplied.

PROMOTIONS OF VETERINARY OFFICERS, REGULAR ARMY

2nd Lieut. Frank M. Lee has been promoted to the grade of 1st Lieutenant with rank from May 16, 1923.

1st Lieut. Thomas A. Breen has been promoted to the grade of Captain with rank from May 21st.

The following veterinary officers have completed the course of instruction at the Army Veterinary School for the class ending June 15th, and it is of interest to note that the entire class were honor graduates, each student making a general average of 90 or over. The officers are listed as to their general averages, the highest being first and so on: 1st. Lt. Ralph B. Stewart, 1st. Lt. Lloyd C. Ewen, 1st. Lt. Paul R. King, 1st. Lt. Harry E. VanTuyl, Capt. Jacob E. Behney, Major Burt English.

Dr. G. A. Ferguson, Danville, Va., has been commissioned first lieutenant in the National Guards by the Governor and was assigned Hospital Company 110 of the 29th Division, as veterinarian and adjutant.

The National Defense Act under which the veterinarian is now being commissioned insures an individual advantage to those who enlist and later when an emergency arises it will insure prompt, harmonious mobilization of industry and manpower.

The National Defense Act of 1920 provides a definite military plan for the defense of the nation, but it does more than that. It conceives the employment of all of the worthwhile brains and brawn of the civil population as well as all of the essential material resources of the country whenever these may be needed. It seems to be the most economical defense plan ever conceived by any nation.

CHANGES OF STATION OF VETERINARY OFFICERS, REGULAR ARMY

In addition to the present duties of 1st Lieut. Allen C. Wight at Ft. Logan, Colorado, he is directed to act as attending veterinarian, Fitzsimons General Hospital, Denver, Colorado.

The order assigning 1st Lieut. Paul R. King to duty at Ft. Snelling, Minn., has been revoked, and he has been ordered to duty at Ft. Des Moines, Iowa.

Due to the abandonment of Ft. Keogh, Mont., 1st Lieut. John K. McConeghy has been ordered to duty at the Chicago Quartermaster Intermediate, Chicago, Ill.

1st Lieut. Fred W. Shinn has been relieved from further permanent duty at Ft. Riley, Kansas, and temporary duty at the Chicago Quartermaster Intermediate Depot and directed to proceed to Panama on the transport sailing September 6, 1923, for duty in the Panama Canal Department.

1st Lieut. Charles O. Grace has been directed on the termination of his foreign service tour, September 22, 1923, to return to the United States and report for duty as station veterinarian, Ft. Des Moines, Iowa.

DEPEND ON

United Serums

W & O Brand Universal Brand

"Protect Hogs The World Over"

You eliminate the element of chance when you administer either W & O or Universal Brands of Serum and Virus. When these brands are used the results are assured—for United Serums are of uniform, high quality—pure, dependable and of maximum potency.

UNITED SERUM CO.

Kansas City,

Kansas

Recently Commissioned Veterinary Reserve Officers

Majors
Kingman, Harry E.
Stewart, Samuel L.

Captains
Bigelow, Fred C.
Croll, Forrest B.
Friedline, Lloyd M.
Meyer, Oliver A.
Quigley, Roscoe M.
Sarde, Robert M.
Shuford, Edward L., Jr.

First Lieutenants
Hartwig, Frederick G.
McMillan, Harold L.
Russell, Fay F.
Sisley, Morris J.

Second Lieutenants
Abel, George C.
Breeden, George L., Jr.
Button, Otis G.
Byler, Carlos C.
Dietrich, LeRoy E.
Dietrich, Melvin L.
Dowell, Charles M.
Kaliher, Vernon M.
Kennedy, Rufus T.
Long, Leslie E.
Mattingly, Irvan C.
Ottinger, Guy A.
Runquist, Nelson A.
Sailor, Ernest S.
Schattenburg, August E.
Smith, Benjamin Harrison
Utter, Bror A.
Ward, Calvin A.

Lt. Col. W. P. Hill, Commandant of the Army Veterinary school is on a month's leave of absence, motoring with Mrs. Hill from Chicago to Washington.

Dr. Walter D. Jensen who commanded Army Mobile Hospital No. 1 during the Argonne-Meuse operation is commander of Benhart Post, No. 213 American Legion, Taylor, Nebraska.

Dr. Edward I. Cheely, former captain of the veterinary corps has located at Gilroy, California to establish a general practice. He obtained his discharge from the army last November and was for a time located at Hollister, California.

Veterinary Biological Products

Prepared by

THE GILLILAND LABORATORIES

MARIETTA, PENNA.

TETANUS ANTITOXIN

TUBERCULIN
Subcutaneous
Intradermal
Ophthalmic
In Disc Form
In Liquid Form

MALLEIN
Subcutaneous
Intra-Palpebral
Ophthalmic
In Disc Form
In Liquid Form

ANTISTREPTOCOCCIC SERUM

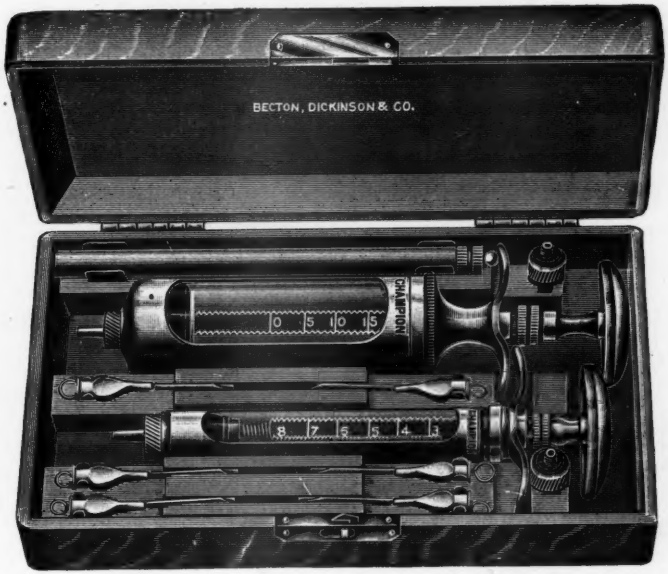
AntiRabic Treatment (Pasteur Method)

B-D PRODUCTS

Made for the Profession

CHAMPION

Vaccinating Outfit for the Simultaneous Administration of Serum and Virus



W-505-40-8T

The New Champion Vaccinating Outfits are Adapted to Either One or Two Hand Manipulation

SEND FOR OUR VETERINARY CATALOGUE

SUPPLIED THROUGH DEALERS

BECTON, DICKINSON & CO.

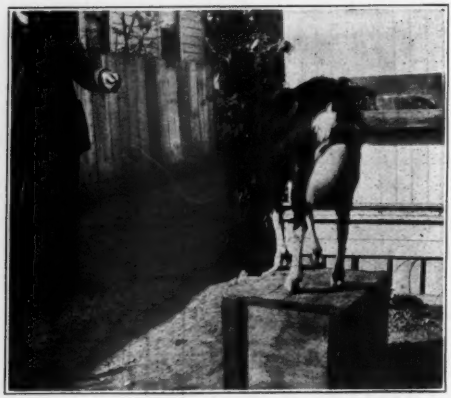
RUTHERFORD, N. J.

Makers of B-D Veterinary Thermometers, Champion Syringes and Needles, Monarch Milking Tubes and B-D Cattle Specialties.

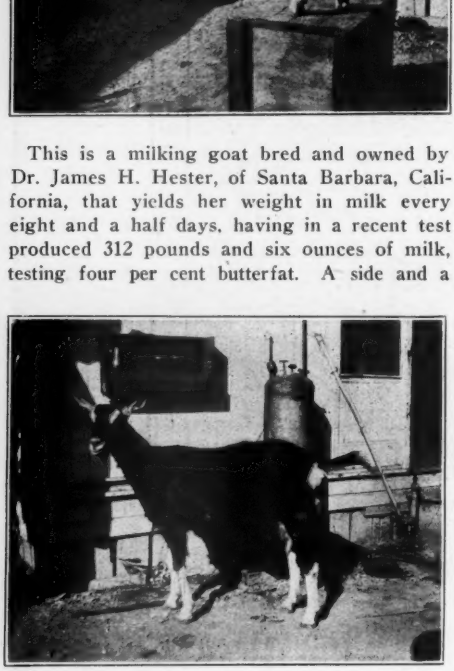
Zootechnic Notes

By E. Merillat, Associate Editor

FACTORY WITH HIGH OUTPUT



This is a milking goat bred and owned by Dr. James H. Hester, of Santa Barbara, California, that yields her weight in milk every eight and a half days, having in a recent test produced 312 pounds and six ounces of milk, testing four per cent butterfat. A side and a



rear view is given the photographs to show the high degree of udder development. This phenomenal animal is only 16 months old and weighs only 85 pounds.

An Angora goat fancier recently reported the shearing of one goat from which he obtained 20 pounds of fleece and the longest locks were 26 inches. The price for such fleece is not less than 60c per pound.

The annual death rate of farm animals per 1000 between 1912 and 1922 was: Horses, 18; cattle, 14.2; sheep, 22.4; and swine 66.4.

According to Dighton in Kennell Gazette, the number of whelps per litter in the winter is smaller and less healthy than in the summer.

Dry feed causes hard fat and thick viscious milk. Green food causes soft fat and more easily churned milk.—Hooper.

Dairymen have found that lower temperature can be obtained and ice can be more effectively used in wooden tanks than in concrete tanks.

A purebred Toggenberg goat owned by the University of California completed a record of 2941.5 pounds of milk in 365 days, which is the largest production on record.

It has been found that there is an appreciable difference in the freezing point between morning and evening milk. The exact cause for this difference has not yet been determined.

Dr. E. C. Morris, manager of the Pioneer Hatchery, Petaluma, California, says that dry yeast develops the skeleton of chicks, makes them feather rapidly, and reduces chick losses to the minimum.

The United States department of agriculture fixes the number of horses in the United States at 20,559,000, and the number of mules at 5,898,000, making us the greatest horse and mule-owning nation.

Swine thrive on field peas. Hogging off field peas is profitable providing the swine are confined to small areas until the crop is all consumed. When peas are fed in dry lots they should be cracked or ground.

A recent bulletin published by the Department of Agriculture gives the details as to the construction of hog wallows. We are firmly of the opinion that there should be no hog wallows on any farm in the United States, as they can truly be classified as a nuisance.

Diseases Caused by Faulty Feeding

now prevented by Fleischmann's Pure Dry Yeast

Have you ever considered how many of the "preventable diseases" in animals are due to faulty feeding?

Tympanites, colic, enteritis, distemper, snuffles, and other diseases—both serious and fatal—can be traced to improper feed or carelessness in feeding.

And not only are these diseases critical in themselves, but they invariably complicate other disorders, making diagnoses and cures more perplexing.

Today Fleischmann's Pure Dry Yeast is correcting many of the phases of alimentary disease due to faulty feeding. Fed as a corrective food, it is daily solving many of the veterinarian's condition.

Exhaustive feeding experiments have shown that Fleischmann's Pure Dry Yeast, ingested with the ration, induces a better digestion. Through a greater cleavage of the proteins in the food a more complete assimilation of nourishment is secured, resulting in a thoroughly improved condition.

Use Fleischmann's Pure Dry Yeast on some case you now have and find out for yourself its extraordinary effectiveness. It will improve the condition and appearance of the animal, and at the same time fortify it against disease.

Fleischmann's Pure Dry Yeast comes in 2½ pound cans, delivered direct to you, transportation prepaid. Full directions with every can. Mail the coupon today!

Order direct from the Fleischmann Company's Branch Office in any of the following cities: New York, Chicago, San Francisco, Los Angeles, Seattle, Hartford, Conn., Portland, Me., Buffalo, Albany, Philadelphia, Pittsburgh, Baltimore, Boston, Birmingham, Cincinnati, Cleveland, Columbus, O., Dallas, St. Louis, Detroit, Newark, St. Paul, Toronto and Montreal.

Send for these booklets

Fleischmann's Pure Dry Yeast can be profitably used for fermenting feeds for all farm animals. Check on the coupon which booklet you want.

CAUTION: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is ALL Yeast—yeast in its most concentrated form. It contains no corn meal or other fillers. To be sure of results order Fleischmann's Pure Dry Yeast—ordering from any of our branch offices listed here.

FLEISCHMANN'S
PURE DRY YEAST

PRICES

1 to 10 cans.....$2.00 per can
10 to 20 cans..... 1.95 per can
20 to 40 cans..... 1.90 per can
Over 40 cans..... 1.80 per can
(Add 50c per can if outside U. S.)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY,
DEPT. D-133, 701 Washington Street, New York, N. Y., or 327 South La Salle St., Chicago, Ill., or 941 Mission Street, San Francisco, Calif., or 314 Bell Street Seattle, Wash.

Enclosed find $..... Please send me.....2½ pound cans of Fleischmann's Pure Dry Yeast postage prepaid.

Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.
Send me your book on raising poultry on yeast-fermented foods.

Name .....

Street and Number.....

City..... State.....

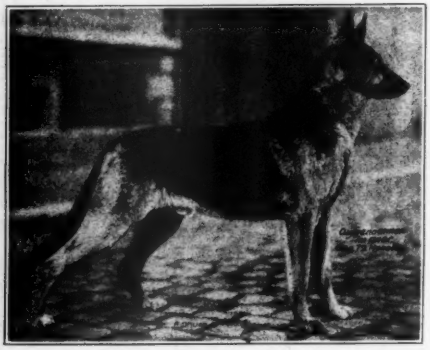
Malta fever in goats, according to the investigators of Gentry and Ferenbaugh, has occurred in Texas since about 1886, and G. C. Lake reported the prevalence of this disease in Arizona since about 1908.

LONGEVITY OF THE MILKING GOAT

How long are milking goats useful as milkers? I have been told that they do not last over three or four years as good producers. What are the facts in this connection? I am thinking of purchasing a few breeding goats with a view of engaging in the goat industry in a small way as a side line.—Missouri.

Reply: Dr. James H. Hester of Santa Barbara, California, who is a breeder of milking goats, states he has goats past the age of ten years that are still at the height of milk production, without any evidence of decline. Your informant is wrong. Goats are long-lived, rugged ruminants.

THE DOG OF THE HOUR



Champion Iwan Von Der Mainkur (A. K. C. 353547)

The German shepherds, better known as "police dogs" have come into such prominence and popularity since the war that we feel it is no exaggeration to call them "The Dog of the Hour". Everywhere the demand greatly exceeds the supply. The figure was supplied to the journal through the courtesy of Mrs. Elizabeth Trass, owner of the Waldteufel Kennels, Chicago, and is reproduced to illustrate the best type of that breed, Iwan having won the distinction of winning a championship within seven months after arriving in this country. He is three years old and is said to have no peer by the keen judges who brought him into distinction. To the dog judge he is true to type; to the novice he is the personification of pep, wit and intelligence.

"There may be great individual variation in fertilities. Such variation is increased by inbreeding and by deficient diet. When the variation is great, the amount of sterility is also great. There are individuals whose fertility is so low that they are unable to reproduce with one another, but whose fertility remains sufficiently high to allow immediate and successful reproduction with highly fertile individuals." —Sloan, A. M. A., Jr.

RECOMMENDS GRAIN MIXTURES FOR FEEDING DAIRY CALVES

Dairy calves in their second week will begin nibbling at grain, if any is available, and by the time they are 1 month old will often eat a half pound a day. Young calves relish wheat bran, which is often used in grain mixtures at the start. Corn has a desirable effect upon cattle of all ages and is available on most farms. It helps to make up for the fat removed from skim milk. Experiments have shown that cracked corn is better than ground corn for young calves. The United States department of agriculture recommends that bran and cracked corn be made the basis of the feed mixture whenever possible. Ground oats is a very good feed, but oats are not so generally grown as corn and usually cost more per unit of feed than corn and bran. The department recommends any of the following mixtures as suitable for young calves:

1. Three parts cracked corn and 1 part wheat bran.
2. Three parts cracked corn, 1 part wheat bran, and 1 part ground oats.
3. Three parts cracked corn, 1 part wheat bran, 1 part ground oats, and 1 part linseed meal.
4. Five parts cracked corn, 1 part wheat bran, 1 part ground oats, and 1 part blood meal.
5. Oats, ground.

Some time during the third month calves will probably be eating about 3 pounds of grain a day. When the grain is fed with the separated milk it should never be mixed with the milk, and it is questionable whether there is any advantage in soaking or boiling.

Semi-Solid Buttermilk

(TRADE MARK)

When Fed to the Herd Before and After

HOG CHOLERA

Vaccination treatment is given, builds up the system and creates a reserve strength that helps keep unchecked and unstunted every pig's growth.

Semi-Solid Buttermilk, with its health giving lactic acid content, is now recognized as Nature's greatest protection against disease germs, keeps the intestines free from infection and the bowels moving regularly. Leading veterinarians know that the cholera-immune herd that is fed Semi-Solid is the most profitable.

Semi-Solid Buttermilk is purecreamery buttermilk, pasteurized and condensed to point of maximum medicinal value per pound and is prepared in containers ranging from 1 gallon to 500 pounds.

For the veterinarian's use,we put up a case of six 1-gallon cans selling for $4.00 F. O. B. Chicago. This gives the veterinarian a small, immediately available supply for the use of his clients. Twenty-eight factories assure low freight costs and the ability to secure Semi-Solid Buttermilk from convenient points.

Write today for full information on the value of Semi-Solid and the name of nearest dealer from whom your clients can quickly get their supply.

Consolidated Products Company

4750 Sheridan Road, Room 758, CHICAGO, ILL.

A long-continued, excessively-rich protein diet is prone to produce temporary or permanent sterility in boars. A diet composed largely of linseed meal and tankage has been found to cause permanent sterility.

USEFUL AFTER 28 YEARS OF SERVICE

This is a pair of mules on the streets of Augusta, Arkansas that has been driven by one negro for 28 consecutive years. They work on a dray and last year an offer of $300 was refused for them.—Dr. Earle L. Kittreel.

It has been estimated that there were 13,256,000 brood sows on farms on April 1st, 1923. On April 1st, 1922, there were 12,424,000. The spring pig crop probably will not be as large in 1923 as it was in 1922 because of the excessive losses of pigs in March and April this year, due to unfavorable weather.

There were 13,250,000 sows on farms in the United States on April 1, 1923. This is an increase of over 800,000 in the last year. It is probable that there will be less swine produced in 1923 than there was in 1922, because of the excessive loss of little pigs during the stormy weather of last March and April.

The rank of the first ten states in egg and poultry produced according to the Federal census of 1920 is as follows:

Iowa	$70,212,644
Illinois	67,690,085
Missouri	66,271,029
Ohio	64,109,133
Pennsylvania	53,709,243
Indiana	52,765,970
Kansas	44,199,844
Texas	43,303,622
New York	42,841,499
California	40,341,744

It has been found by Calmette and his coworkers that a certain degree of immunity against tuberculosis can be produced in guinea pigs and rabbits by the intravenous injection of bile-treated tubercle bacilli.

There appears to be a symbiotic relationship between vaccina and leprosy. It has been found that a relatively large percentage of lepers develop leprous lesions following the successful vaccination with small pox virus.

Cummins reports in Pub. Health, London, that bovine tuberculosis is responsible for 17% of pulmonary, 18% of meningeal, 21% of bone and joint, 51% of abdominal and 50% of cervical gland tuberculosis in the human.

The live stock industry of Argentina experienced a marked depreciation in values during 1920 and the first part of 1922. There was a severe drought during the same time and many cattle were lost and the dairy exports were reduced about one-third.

The Montana Experiment Station has reported results of a preliminary experiment in which the value of skim milk was tested as a supplemental feed for dairy cows. It was found that when 20 pounds skim milk were fed daily it had a value of 25c per hundred when hay was $15.00 per ton, grain $1.50 per hundred and ensilage $6.00 per ton.

It is evident in the breeding of bees and other insects that eggs have sex, independent of their subsequent fertilization and segmentation. Bee breeding also teaches us that the fertilization of eggs by the male element (semen) is not essential to reproduction in certain species of insects.

ON THE TRAIL OF THE RAZOR-BACK

Swine were introduced into Missouri about 1540 by Hernandez DeSoto. A herd of swine was obtained in Cuba and taken with the exploring party when it left the coast for the interior on Jan. 15th, 1539. Some of these swine were bartered to Indians and others were used for food, but they increased rather rapidly, for it is further stated in Spanish manuscripts that when DeSoto died in 1542 his supplies and equipment including 700 head of swine were sold. Columbus introduced swine into Haiti and from there they were introduced into Cuba where they were extensively bred.

SWINE WORM CAPSULES

All materials for these products have shown sharp advances in price in the last thirty days. We advise our customers to BUY NOW, thereby protecting themselves against further advances.

NO. 136. Oil Chenopodium Compound

An Oil of Chenopodium Worm Capsule for Swine.
Composed of: Oil Chenopodium—5 grs., Creosote—3 grs., Oil Croton—3 grs., Copper Sulphate—3 grs., Absorbent v-s.

Price Per 1000 Capsules, packed 25 in a box, $20.00

NO. 305. Vermuloids, For Swine

Composed of: Thymol—2 grs., Cresote—3 grs., Aloin—5 grs., Chenopodium—3 grs., Areca Nut—4 grs., Calomel—3 grs.

Price Per 1000 Capsules, packed 25 in a box, $15.00

NO. 330. Santonin Worm Capsules

The Genuine Santonin Swine Worm Capsule. Composed of: Santonin—2½ grs., Aloin—2½ grs., Calomel—2½ grs.

Price Per 1000 Capsules, packed 25 in a box, $90.00

THE EAGLE CO.

38 South Seventh St., Kansas City, Kans.

Case Reports, Queries and Answers

DURATION OF ESTRUM IN COWS

Is it true that the period of estrum of cows lasts three days? In a discussion before a local association a controversy arose over this question, some of the members claimed the period lasted three days while others insisted it was much shorter. We have agreed to ask you to decide.—Illinois.

Reply: The period of estrum counted from the very first evidence of discharge until the last moment the cow will accept service, may be as long as three days, but the actual period during which a cow will accept service is much shorter. When a cow shows signs of "bulling" by mounting her herd mates it is good practice to get her to the bull without delay. The next day she will have changed her mind according to our experiences. For practical purpose it should be insisted that the period in cows is one day.

NEURALGIA OF THE TRIFACIAL

I desire information regarding a pair of horses 12 and 17 years old working on a rural mail route. The team shows symptoms of epileptic fits. They will stop, shake their heads, tremble, sometimes sit down and act as if poisoned with strychnin. They seem to be stricken at about the same place on the route, but not every day. I have treated them for intestinal parasites without effect.—Illinois.

Reply: These horses seem to have true epileptic fits, but the fact that both of them are worked and cared for under similar conditions would lead one to the conclusion that there is a common cause, probably neuralgia of the trifacial, a rare condition of road horses described by W. L. Williams twenty years ago. It is not the tic douloureux of humans but is thought to be a reflex epilepsy. There is every reason to believe this highly sensitive and superficially-distributed nerve can become neuralgic in horses driving against wind and storm day after day. Neurotomy of the superior maxillary branches of the trifacial at the infraorbital foramen has been successful in some cases.

OINTMENT FOR FLEXION CREVICES

There is a great deal of scratches among the horses of this district and I have trouble in curing some of them. At this time I have two troublesome cases. They improve to a certain point and then stop healing. I have given Fowler's solution internally and have tried all kinds of ointments. Can you help me out?—Wisconsin.

Reply: There are cases of scratches that are very refractory to treatment. In chronic cases where the edges of the crevices are horn-like scabs it is best to first dissolve the encrustation by frequent applications of hydrogen peroxide. Soak the parts well with it and bind some on soaked in cotton. When the surface is perfectly smooth, the best ointment we have ever used is composed of equal parts of tannic and salicylic acids mixed with lanolin in proportions to make a hard ointment. Use no water. Just wipe off the ointment and apply more, and do so frequently three or four times a day.

TRIED TO DISCREDIT MERITORIOUS OPERATION

While attending the Kansas City Veterinary College we were taught to perform the tongue slitting operation for self-sucking cows, and we have found it to be helpful in making useless animals valuable. Recently an old practitioner who has been here for 35 years and has no use for young opponents has been trying to cause us trouble through the medium of the humane society, claiming that the operation is cruelty to animals. We used to slit the tongue back a few inches but as the wound healed together again we now cut one segment squarely off. I would like to have your opinion as to whether or not this operation can be proved to be cruel.—Ohio.

Reply: The operation referred to is regarded as a classical procedure by many practitioners. In fact, it is the only good surgical operation for that purpose. There is no justification for pronouncing it cruel unless it is performed in a cruel manner. It causes no permanent inconvenience to the animal. The old veterinarian is wrong several ways.

COWS SEEM POISONED

A very valuable Guernsey heifer one year old running at pasture and large woods was found sick with the following symptoms:—Droopy eyes, head hanging, tongue hanging from mouth as if paralysed, grinding the teeth, oral mucous membrane yellow, blind staggers, pushes head against the manger, no appetite. Died on the third day.

The postmortem examination revealed yellowness of the liver and severe inflammatory conditions of the stomachs the lining of which pealed off like wall paper. The flesh was also yellowish in color and there was some inflammation of the small intestines. The rumen contained a handful of muck.

A second case of the same kind developed the following day, but this one did not exhibit the staggers.—Indiana.

Reply: The history, symptoms and postmortem findings point very accusingly to poisoning, either from plants eaten or from some chemical substance. Woods pastures are often very dangerous this time of the year when certain poisonous plants grow up exhuberantly. The muck found in the rumen should not be passed off lightly. Poisonous roots are often churned up with dirt at the approach of watering places by tramping. Complete change of environment until the cause is located is all we can recommend.

"SAVE THE HORSE"

With reference to your formula for "Save the Horse" published in the April issue I wish to say that we have two formulae for this preparation, as follows:

℞

Oil of wormwood
Oil of cedar, of each .....4 dr.
Iodin crystals .....1 oz.
Wood alcohol q. s. .....8 oz.

Apply once a day for three days, grease with lard for three days and repeat.

℞

Oil of spike .....12 dr.
Oil of wormwood ..... 2 dr.
Menthol ..... 1 dr.
Sulphuric acid ..... 2 oz.
Wood alcohol q.s. .....16 oz.

Apply once a day for three days, skip three days, etc.

Comment: The first mixture can not be recommended because wood alcohol and iodin produce a harmful reaction.—Ed.

Solves Your Poultry Scourge Troubles

GUAIALYPTUS:

The high medicinal value of Guaialyptus has always been recognized where an intestinal or a respiratory antiseptic is needed.

It now proves to be the outstanding "sheet anchor" for the principal fowl ailments: ROUP, CHOLERA and OTHER FOWL SCOURGES, either in the form of individual or flock treatment. Given in the drinking water it CONTROLS and CURES these outbreaks, hundreds of veterinarians attest.

Think of it also as a standard treatment for CANINE, EQUINE and FELINE DISTEMPER, BRONCHITIS, LARYNGITIS, INFLUENZA, and STRANGLES.

In "FLU", NECROTIC ENTERITIS, and OTHER INTESTINAL AND RESPIRATORY DISORDERS OF SWINE many veterinarians use it exclusively.

The price is right; the dose is small: 1 Gallon, $5.50; 2 Gallons, $10.50 express prepaid; 5 Gallons, $25.00, express prepaid.

EUCAMPHOLINE:

A highly refined general antiseptic for both internal and external use. The pleasing odor, the perfect, white emulsion in dilution, and its high antiseptic potency assures its continued popularity among practitioners. It is better and in the end cheaper than the common creaylic compounds.

The price is right and the quality guaranteed: 1 Gallon, $3.50; 2 Gallons, $6.50; 5 Gallons, $15.00, express prepaid.

DRS. CROWE – FISCHER

2805 Indiana Avenue **Chicago, Illinois**

Telephones: Victory 7510 and Victory 8900

POLL-EVIL (?)

I am sending you a sample of blood from a six-year old saddle horse whose case I have failed to diagnose. This horse was found in the pasture three weeks ago, unable to get the head down to eat, and a few days later was stiff all over. The muscles of the neck are especially stiff and the head is carried extended. There is sensitiveness at the top of the neck. He winces when the mane is turned from one side to the other.

Although the temperature and pulse are normal there is a rale in the lungs that sounds like that of crushing dry paper. Can you help me make a diagnosis of this case?—West Virginia.

Reply: The case is evidently one of abscessation following a neglected case of croupous pneumonia. At least the sounds described are those usually heard during the convalescent stage of that disease. In trying to make a diagnosis think of poll-evil or fistula of the wither in the incipient state, also tortocollis rheumatica. It is of course supposed that tetanus has been excluded.

NOT DEATH FROM LIGHTNING

After a slight electric storm on May 18 a veterinarian was called to see a Jersey cow 10 years old that was down in the pasture. He pronounced the case one of lightning stroke, had her hauled to the stable, administered some treatment and gave an unfavorable prognosis. She lived six days. I was called by the insurance company the day previous to her death. The owner said she gave the usual amount of milk in the morning and was turned out with the other cattle as usual. She was found down in the evening, and the veterinarian was called.

On examination five days later I found her in a semi-comatose condition, unable to swallow, eyes dull and staring and exhibiting the symptoms of cerebrospinal meningitis. I pronounced her a case of botulism or forage poisoning. Another veterinarian called in consultation confirmed my diagnosis.

Would it be possible for a cow to live that long after receiving a lightning stroke severe enough to throw her down permanently? What would you consider a correct diagnosis? The first veterinarian called held a postmortem examination and pronounced his diagnosis correct.

Reply: There is no part of the events described that would indicate death from electricity, and the veterinarian who held the postmortem examination could not have found any internal lesions of electric shock because such lesions do not exist, other than the burns the stroke might produce on the surface. The dysphagia and paralysis seem to indicate botulism.

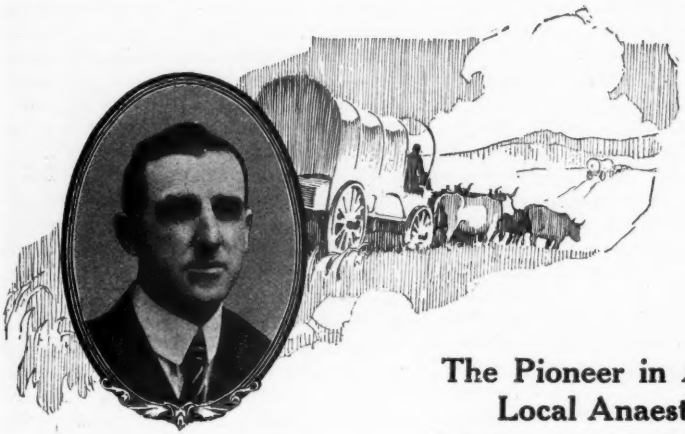
TREATING YOUNG FOXES FOR WORMS

I would like you to explain the methods of treating young foxes for hookworm with carbon tetrachlorid. It seems to be understood here that to handle a young fox is sure death to it, as it is claimed the mother will kill it as soon as she can after it has been handled. There are several fur farms in this district, and the owner of one of them has been losing quite a few pups. He brought one carcass in for an autopsy and I found the pyloric end of the stomach full of round worms from three to seven inches long, all curled up in clumps. The small intestines were also full of them for a foot posterior to the stomach also curled up in rings like a chain. The worms were red at both ends and the bodies were a pearly white. If you can offer a suggestion as to the handling of these pups, I would be very thankful. I would also like to know whether the owner is wrong or not.—Minnesota.

Reply by Maurice C. Hall: With reference to the belief that handling a young fox will result in the mother killing it, I am unable to speak from first hand knowledge. However, I judge from the available literature that if any such danger exists it can be avoided. Jeffreys (1922; American Fox and Fur Farmer, v. 1, no. 8, Feb., pp. 4-7) says in regard to treating fox pups for worms:

"The female is first shut out from the den by a slide door. The pups are then removed from the nest box and placed into one of the compartments of the carrying box. The nest box may be cleaned of any refuse at the same time. The mother fox should be kept shut out from the den while the pups are away. As long as she cannot get in to see she will not suspect that they were taken away. The pups are now carried to the hospital pen for treatment."

"When treatment of pups is started early in the morning the pups will be ready to take back to their dens immediately after dinner. The pups are carried back to the dens in their carrying box and placed into their respective nest box. Just before the slide door of the chute is opened for the mother, a piece of



Dr. R. B. Waite, producer of the first ready-to-use Antiseptic Local Anaesthetic

$1.00 Box of Ampules for 25c

To introduce Waite's Antiseptic Local Anaesthetic we will send you $1.00 box on receipt of your professional card and 25c, or if you prefer a free sample, for your professional card only. Try it out on your most difficult cases of minor or major surgery where a local anaesthetic would be used. Note its quick, positive action—the perfect anaesthesia that lasts. Waite's is sterile, antiseptic, isotonic, nontoxic—leaves no soreness nor after-pains.

The Pioneer in Antiseptic Local Anaesthetics

Over thirty years ago Dr. R. B. Waite realized that most troubles in the use of local anaesthetics came from the lack of a sterile, antiseptic, isotonic base.

With the undaunted courage of a pioneer, Dr. R. B. Waite set out to produce a sterile, antiseptic, isotonic, ready-to-use anaesthetic. Dr. R. B. Waite's Antiseptic Local Anaesthetic was his crowning achievement.

For over thirty years the standard, ready-to-use antiseptic local anaesthetic of the dental and medical professions—Dr. R. B. Waite's is now being sold to the veterinary profession, endorsed by many of its leading members.

Waite's Anaesthetic is sold in ampules, every batch of which is sterilized and tested in our own bacteriological laboratory; it is also put up in bottles.

Waite's
ANTISEPTIC
LOCAL ANAESTHETIC

In Ampules — In Bottles — Procaine Tablets

Sold only to recognized veterinarians, by veterinary supply houses, wholesale druggists and dental depots.

ANTIDOLOR MFG. COMPANY

77 MAIN ST., SPRINGVILLE, N. Y.

Check, Sign and Mail This Coupon

Enclose professional card or stationery. Only one $1.00 box of ampules for 25c to a veterinarian—money returned to anyone ordering twice.

Antidolor Mfg. Co.
Springville, N. Y., U. S. A.

Enclosed find 25c for which send me $1.00 package of Waite's Antiseptic Local Anaesthetic in ampules. Enclosed find my professional card or letterhead for which send me free sample of Dr. R. B. Waite's Antiseptic Local Anaesthetic.

Name .....

Address .....

meat or rabbit is thrown to her. The keeper should then leave the pen immediately and retire to the watch tower and keep a sharp lookout. The female will go into the den, reappear in a few seconds, take a look around, then go back in. If she remains in all is well. If she attempts to bring out the pups this can easily be stopped by approaching the pen."

Attitude of Vixen No Great Obstacle

Various writers have recommended that fox pups be treated when 3 to 6 weeks old, and as these writers are men with practical experience in the fox business it must be assumed that the attitude of the vixen towards pups that have been handled presents no great obstacle to treatment. As a rule they say nothing in regard to the matter and in a number of publications on fox raising which I have examined there is no reference to danger to pups which have been handled. Possibly this danger is only one phase of a subject which is mentioned by Dearborn (1915; Silver fox farming in Eastern North America, U. S. Dept. Agric, Bull. No. 301) in a discussion of vixens: "Worst of all, even after producing a litter of healthy young, she may be so solicitous for their safety as to maltreat or kill them in her efforts to get them out of imaginary harm's way."

Carbon Tetrachlorid Safe

The subject of anthelmintic medication for worms in foxes was discussed by me in a paper in VETERINARY MEDICINE for January, 1923. The technic of administering anthelmintics to foxes has been discussed in some detail by Jeffreys (1922; American Fox and Fur Farmer, p. 1, no. 11, May, pp. 14-15) and by Hanson and Van Velkenburg (1923; American Fox and Fur Farmer, v. 2, no. 9, pp. 6-9). In the light of developments during the past five months it appears probable that the safety factor with carbon tetrachlorid is greater when prompt purgation is obtained. The drug is usually very safe, but in some animals there appears to be increased absorption over that in normal animals and if there are existing liver and kidney lesions serious damage may occur.

Prompt Purgation an Advantage

Prompt purgation diminishes this absorption, apparently. In this connection we have some evidence from the field of human medicine in regard to the advantage of prompt purgation and also the work of Macht and Finesilver to the effect that magnesium sulphate inhibits the absorption of other drugs to a great extent. If a solution of Epsom salts is given to dogs it is best given by stomach tube, as the taste of salts predisposes a dog to vomit.

Passing a stomach tube in the fox is a subject that appears to have had little consideration. In connection with purgation it may be noted that Allen (1922; Fox Ranching in Canada, Canada Dept. Agric. Bull. No. 12, new ser.) reports toxic effects in pups from 1 minim of chenopodium and 5 minims of castor oil. This dose of castor oil is too small. Castor oil in adequate amounts adds greatly to the safety of chenopodium. Allen found it safe in doses of 15 to 20 or 30 minims for adult foxes when given with an ounce of castor oil and in treating a fox pup it would seem probable that at least a half ounce of castor oil should be given.

Fox pups appear to be easily handled and apparently capsules can be given to them with the fingers up to the time they are 6 weeks old. This being the case it would seem feasible and advisable to give them an adequate amount of castor oil with chenopodium. The advisability of giving Epsom salts with carbon tetrachlorid to foxes is a matter that will require experimental test by those in a position to make such tests. Presumably the method of passing the stomach tube which is used on dogs, using a wooden or metal speculum to hold the mouth open, would be satisfactory in the case of foxes, but the matter requires practical test.

COITAL PROCTITIS IN A MARE

An accident happened to one of my client's mares in breeding her and I would like information as whether the owner of the stallion is liable for damages. The mare acted vicious and was bred with the breeding hopples. As the stallion mounted her she scrooched down and the penis entered the rectum. It was noticed immediately that the mare was bleeding from the rectum but as the owner of the stallion said nothing serious had happened she was bred again in a few minutes with the same results. My client called me four hours later but I did not arrive until six and a half hours after the accident occurred. On examination I found a rent six inches long in the floating colon, through which a large quantity of fecal matter had dropped into the peritoneal cavity. The mare which was worth $250 died the next morning. Do you think my client can collect damages by law?—Washington.

Reply:—The usual decision in lawsuits following this common accident is for the defendent, although in this case there seems to have been mighty poor judgment displayed by the stallion owner. The damage was probably

done at the first service. The rectum was full and the penis drove its contents right through the wall of the colon into the peritoneal cavity. This of course would have been fatal, but for a stallion care-taker to have repeated the blunder with blood running from the mare's rectum is such a flagrant case of adding insult to injury that it might be well for your client to leave the matter to a jury.

INSULIN

What is the Insulin? It has been mentioned considerably of late in the newspapers and scientific journals. It is recommended for diabetes.—Illinois.

Reply: Insulin is the name that has been adopted for a new organ extract. It is made from the Islands of Langerhaus of the pancreas. The name is derived from "insula", the Latin for "island". It is said to have a remarkable curative influence on certain forms of diabetis of humans.

To the Editor:—Yours is certainly a splendid publication, and no up-to-date veterinarian can afford to miss a single copy and the good things in it. I usually read it from cover to cover as soon as it arrives.—G. A. F., Va.

WHEN WAS THE CONTAGIOUSNESS OF ABORTION DISEASE DISCOVERED?

I would like to know at what time in veterinary history abortion disease was found to be contagious. When I was at college only thirty years ago nothing was mentioned about the spread of this disease from one animal to another, although we had an up-to-date professor of obstetrics and a teacher of theory and practice who was never regarded as being behind the times.—New York.

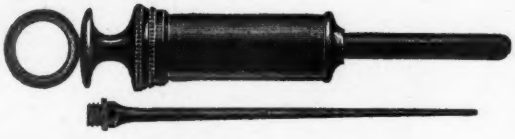
Reply: Abortion was thought to be contagious, many, many years ago, even before there was much known about pathogenic bacteria. Bouley in the Dictionaire Veterinaire (1856) says "The disease is evidently contagious for when one animal aborts in a herd other abortions are sure to follow." It was however only in 1897 that Bangs described the Brucela (bacterium) abortus, now universally accepted as the principal causative agency. The teachers in the American veterinary schools during the 90's and before only thought they were up-to-date. They all made the mistake of not following up the developments in bacteriology that were continually appearing in European literature, and as a consequence turned out

Here is Your Chance to Save Money

Limited number of Quitman 10cc hypo Syringes, complete in khaki roll with four needles in nickel-plated tube.

Special Price $1.00

Heavy, brass, nickel-plated 4 ounce dose syringe with ring handle and double leather plunger two pipes at $1.00 each; $5.25 half dozen; $10.00 dozen.



Prices quoted f. o. b. Chicago.

SHARP & SMITH

Home of

High Grade Veterinary Instruments, Supplies & Books

65 E. Lake Street, Chicago, Illinois.

graduates who were not as well informed on the knowledge of that day as they believed.

A FATAL CASE OF MILK FEVER IN A COW

A jersey after giving birth to her third calf went down with milk fever 24 hours after parturition. She had been down four hours when I was called. Her temperature was 96° Fahr. and she was lying flat and perfectly comatose. I inflated the udder and gave camphorated oil hypodermically and a little fluid-extract of nux vomica on the tongue, and then braced her up. Twelve hours later she drank a half pail of water but as she was not up I cathetrised the bladder. The next morning she was on her feet. I gave her carbonate of ammonia and a physic ball. For three days she was fine and apparently making a recovery, when suddenly she went down again. I treated her every 12 hours as before but in spite of everything she died the second day following the final attack. What, if anything, could I have done to save this animal?—Wisconsin.

Reply: While the present-day treatment for milk fever is very successful it must be remembered that it does not save 100% of the cases. Like in all other serious ailments there are different degrees of severity in milk fever. Some are fatally stricken and die in spite of the classical treatment. The case described above, in view of the good treatment given, seems to have been doomed, although the owner was quite negligent in having allowed her to suffer for four hours before calling the veterinarian. Four hours is a long while for a cow to lie stretched out in a comatose condition. Then it is very probable that he gave some first-aid treatment that contributed to the fatal termination.

STOMACH PUMP OR DRENCHING BOTTLE?

I would like advice about the use of the stomach tube in cattle, for various cases of indigestion and impactions. I have drenched cattle for more than 30 years and have never to my knowledge injured an animal, but being inquisitive about the new ways of treatment, I tried to pass a stomach tube on one of my own cows and failed. I stood on the right side, reached my hand over the nose, raised it a little, opened the mouth with my thumb and proceeded to push the tube down her throat. She gagged, coughed and choked and threw up particles of food until I became alarmed and withdrew the tube. Now just what did I do to make such a failure?

THREE PRIZE WINNING MARES

Property of Trumans' Pioneer Stud Farm, Bushnell, Illinois

I would like to be instructed in the technic of using the tube. How much coughing and gaging should one expect? Is it essential to use the double tube in horses?—Florida.

Reply: Aspiration of liquids and semi-solids into the bronchial tract of cows is by no means an imaginary accident. Its prevention depends upon the care exercised in pouring the drench into the mouth, the general behavior of the animal, and the character of the disease.

The use of the stomach tube is reserved for cases in which there is one or a combination of these hazards, but is hardly worth while when the drench is small and the patient tractable.

We prefer Ferguson's technic. He raises the head to a comfortable angle with the nose ring and rope and then passes the tube right down without ceremony, either with or without a speculum. By passing the hand palm upward on the interdental space the tube can be passed without a speculum, and when one becomes necessary in recalcitrant animals a common plough clevis will answer. Dr. Ferguson uses a common three quarter inch garden hose well rounded at the ends. The double tube is a thing of the past in both horse and cattle practice.

FLOCK HAS TUBERCULOSIS

I am sending you a chicken from an infected flock by parcel post which please examine bacteriologically and if possible assist me in making a diagnosis. The owner has been losing hens for the past four years. This flock is not doing well, the hens stay on their roosts late in the morning and do not eat well. Only the older hens are affected and most of them are reported to be heavy layers. The year-old hens seem to be the ones most susceptible to the trouble. I have employed all the sanitary measures usually recommended for chicken coops and yards but have not been able to check the spread.

The ration seems to be well balanced: oats, corn and meat scraps and they always have access to water.

Reply: Bacteriological examination shows many tubercle bacilli in the liver of the specimen submitted for examination. Unless there are some especially high-priced breeding birds among the flock you should advise your client to dispose of every chicken on the premises and start with a new flock obtained from diseased-free sources. The diseased ones can be selected by the tuberculin test and eliminated, but this is not always practical nor always as economical as to start with a new flock.

DEPENDABILITY

Dependability is based on actual facts or performance. You can depend on Z-S Biologics—they are always resultful. The Veterinary profession has utilized Z-S Bacterins for years and prefer them because of their performance. Results are invariably successful.

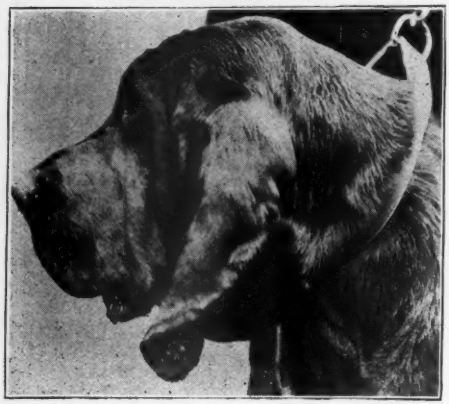
The most scrupulous selection and differentiation of the various bacterial strains employed in preparing Z-S Bacterins insure dependable Biologics for you. Skillful and conscientious work of expert bacteriologists contribute to your success.

The American Veterinarian has a definite and dependable assortment of Biologics in the Z-S line. Have you used them?

ZELL-STRAUB
LABORATORIES, INC
5514-20 Norwood Park Ave.
Chicago, Ill.

The symptoms you describe are not very complete although they are very accusing as far as they go. It might be well to confirm the diagnosis farther by several postmortem examinations. The lesions are more common in the liver and intestinal tract.

DARK OF BRIGHTON



The Head of a Champion Blood Hound.

PARAPLEGIA OF SWINE

Recently I have had called to my attention a number of cases of posterior paralysis in swine and not being familiar with this conditon from a practitioner's standpoint with regard to cause, prevention and treatment, would sincerely appreciate any information along this line.

Not having a large swine practice I read with great interest the many articles in the VETERINARY MEDICINE with reference to swine diseases and in a number of the later issues have noticed considerable mention is being made about the condition attacking swine termed "Hog Flu". I have never met with this disease in swine and would appreciate further information on this trouble.

I thank you for your many favors in the past and again for any information on the above that you may accord me.—Texas.

Reply: There has been much published relative to these conditions in recent times and the general concensus of opinion seems to be that the deficiency is of lime salt, vitamins and probably sanitary conditions and particularly sunshine has an important bearing upon the nutrition or metabolism of the mineral elements and vitamins. In the ordinary cases of deficiency paralysis, you will find that by the feeding of calcium phosphate and particularly if the swine receive any foods in which vitamins exist, such as grasses, green foods or milk products, the condition can be corrected.

If you will write further details of the case, giving the age of the hogs affected and the diet they are receifing, also some details of the symptoms, we can probably give you a more detailed description of the method of control.

I note what you say concerning hog "Flu". and will say that we shall be glad to be of assistance at any time, giving further information relative to any of the ailments of farm animals.

FEEDER SHEEP DYING OF ASCITES

Information relative to the following described condition in sheep will be appreciated. In a band of 9000 shipped in feeder lambs there has been a loss of 32 head in the last few days. Inappetence is the first indication of disease. The abdomen of the affected individuals is pear-shaped, due to accumulation of fluid in the peritoneal cavity. Respiration is labored and there is grunting with each breath. Temperature normal or only slightly elevated. On postmortem examination, from one to two and one-half gallons of an amber-colored or light brown-colored fluid is found in the peritoneal cavity.—D. E. S., Illinois.

Reply: The lambs are affected with ascites. Hepatic disorders, and disturbed portal circulation are the usual causes. Among them is invasion of the liver with flukes, which is a relatively common occurrence in sheep that have been grazed on infested pastures. Few, if any, sheep are produced in districts where the liver flukes are prevalent. It is assumed that flukes were not present in these cases, and sclerosis of the liver, one of the principal causes of ascites, being chronic in character would not account for the condition described. It would therefore appear that the condition was associated with a disturbed portal circulation probably of dietary origin. Ensilage in which there is an excessive quantity of alcohol, or other fermented foods may cause engorgement of the liver and ascites.

An entire change of feed is indicated. If it were found that the lambs are extensively infested with flukes then it would be advisable to sell them for slaughter.

Such cases are extremely interesting. Other reports from our readers would be appreciated.

Dr. J. H. Copenhaver, Pres. Dr. J. S. Koen, Sec.

LIBERTY LABORATORIES

Ralston, Nebraska

THREE ESSENTIALS FOR SUCCESSFUL VACCINATION

Healthy Pigs	Graduate Veterinarian	LIBERTY Serum

RESULTS COUNT

Our knowledge of production together with your ability in administration has produced such consistently satisfactory results to make

LIBERTY CLEAR SERUM

the most popular serum on the market today.

Branch Offices:

Lincoln, Neb.
St. Joseph, Mo.
Des Moines, Iowa
Bloomington, Ill.
Bushnell, Ill.
Davenport, Iowa

Produced under U. S. Veterinary License 127

SIMPLICITY Canine Operating Table

Locks Rigidly—All Positions
Every Necessary Adjustment
Neat, Sanitary, Durable
Fully Guaranteed

Our Other Appliances:

Equine Tables
Stocks
Slings
Surgical Units
Kennels, Etc.

Veterinary Specialty Co.

547 W. Fulton St. Chicago, Ill.

Complete Satisfaction

is what you get when you do business with us.

Hundreds of veterinarians who have been giving us their patronage for years will "bear us out" in this statement.

Our serum is of superlative quality and our service is exactly what it should be.

The Great Western Serum Company

820 Exchange Avenue
Stock Yards

CHICAGO, ILLINOIS

Telegraph Address
"Stock Yards Station"
Chicago

Long Distance Phones
Yards 0372
Yards 6400

The patronage of qualified veterinarians is respectfully solicited.

HOW OPPOSUMS BREED

Please tell us in your good magazine how opposums breed and how the young get into the pouch and when. I have an idea that one or more of your readers will be interested in your answer.—Virginia.

Reply: The opposum is a mammal and therefore breeds like other animals of this class. It belongs to the order Marsupalia, a word derived from "marsupium" or pouch. The only difference between this order of mammals and others in regards to breeding is that the young are born in a state of helplessness. In the case of the opposum the young are born very helpless. They are hardly half an inch long when expelled from the uterus. The intra-uterine life is from 24 to 28 days. When born the mother places them in the pouch and keeps it closely sealed for the first two weeks or more. They usually leave the pouch at seven or eight weeks.

The young when placed in the pouch fix their mouths permanently to the teats. The mouth actually grows around the teat. The young receive a more or less continuous nourishment. The way milk is prevented from flowing into the trachea is interesting. The larynx is protruded upward to the posterior nares and the milk flows along a groove in the tongue and passes to the side of the larynx into the esophagus.

TREATMENT OF COCCIDIOSIS OF CHICKS

Can you give me some pointers on the treatment and management of a flock of three hundred chicks affected with what I think is coccidiosis. The postmortem examinations I have held, at least, indicate that this is the trouble. There are small necrotic spots on the intestines and liver and in some places these run together and make quite a large yellowish patch. The intestinal lesions are found chiefly in the duodenum and caeca, and the contents adhere to the mucous membrane.

These chicks are from three to six weeks old and are dying rapidly. They stand about, refuse feed and have a diarrhea that sticks to the feathers around the vent.—Kansas.

Reply: The diagnosis should have been promptly confirmed by a laboratory diagnosis. The veterinary department of your state college would have attended to that for you without delay.

The symptoms described correspond well enough with those of chick coccidiosis so far

as they go, but you must recognize that one can not make a positive diagnosis without further evidence.

There is no specific medical or biologic treatment for coccidiosis. The sick should be killed and properly disposed of, and the coops and runs thoroughly cleaned up. The well chick should be moved to new non-contaminated quarters, and then fed and watered in such a way that they can not soil their feed and water supply with their feet and droppings. As soon as new cases are found they should be removed from the brood and killed. Where possible it is good practice to plow the contaminated ground and sprinkle it with fresh lime.

MULES DIE OF RABIES

Rabies prevails more or less extensively in all sections of the United States and from general reports it is apparent that the disease will increase unless efficient control measures are instituted. The sanitary authorities in some states have recognized the value of control measures but unfortunately the officials in most states, probably because of political interference, have not provided for the control of rabies even in small animals. This disease is very prevalent among the dogs of several of the larger cities in the central states, and deaths in the human from rabies is not at all uncommon.

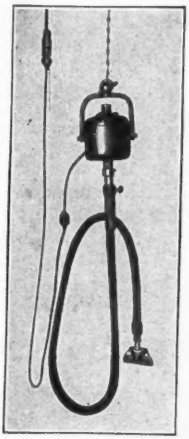
A Serious Outbreak Described

Drs. A. W. James and R. S. Shipp of Cameron, Missouri, report a very interesting outbreak that involved dogs, cattle and mules. The origin of the infection was not determined but rabies is known to have been prevalent in an adjacent neighborhood. The history of this particular outbreak is about the usual in such cases and emphasizes the necessity of publicity of the symptoms and measures for the control of rabies. In this particular outbreak the dog on the farm was thought to have been run over by an automobile and according to the owner's statement became quite cross and had a desire to fight and did bite several different animals on the place. This man did not suspect his dog had died of rabies until one cow and two mules had died and another cow was showing marked symptoms of rabies. He then began to wonder if the dog had had any relation or connection in the series of deaths. Had the subject of rabies been given publicity in the country newspapers the chances are that this

Here Is a Real Time and Money Saver

The GILLETTE Electric Clipper

Eliminates Unnecessary Work and Annoyance



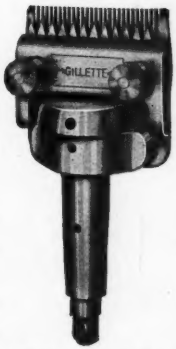
Model 1911 Portable Electric Clipping, Grooming and Shearing Machine

It Clips
Horses, Mules, Cattle and Dogs

It Shears
Sheep and Goats

It Grooms
Horses and Cattle

Operates from Any Electric Socket



Gillette Special Dog Cutter. Guaranteed to Clip Hair of Any Kind of Dog

Send for literature which gives prices and descriptions of all types of hand and power machines; also hand and toilet clippers.

Gillette Clipping Machine Co.
133 West 31st Street
New York City

particular outbreak would have been limited to the one dog.

The mules that died were team mates. The first one died May 1st, just one month after the dog died. The second mule being an odd one on the farm was sold to a local buyer on May 21st, and began showing symptoms on the 25th and was destroyed on the 30th. The first cow died on May 17th, and the second cow was destroyed on May 30th. The symptoms manifested by the mules consisted of rubbing the lips and skin of the face and later of rubbing the nose on the front legs. This rubbing was so persistent that it became necessary to crosstie the mule to prevent extensive lacerations. The second mule that became affected began to show marked furious symptoms on the morning of May 30th, and was destroyed. The clinical diagnosis was verified by a laboratory examination of the brain.

Vaccinate All Exposed Animals

The extent of the loss on this farm can not be determined at this time but the owner has been instructed to confine any animal that shows anything unusual, and the doctors have made arrangements to immunize all animals that had been exposed, using the six-injection rabies vaccine.

Similar incidents in various sections of the country could be prevented by; first, giving a greater publicity of this disease particularly detailing the danger of the stray dog, the symptoms of dumb and furious rabies and second, by a rigid enforcement of efficient control measures. A. T. K.

VALVULAR INSUFFICIENCY IN A YOUNG MULE

I was called to see a three-year old mule having the following history: Broken to harness and field work as a three-year old this spring. Nothing abnormal is observed when worked carefully. When urged to do steady pulling in the field it becomes exhausted in about an hour. Spirits and general health good.

On examination when at rest there is a slight thoracic jerking that synchronises with the pulsations at the jaw. There is no spasm of the diaphragm.

When not working nothing unusual can be determined from a distance. There is no earlier history as the mule was purchased at a

Dr. C. A. Clark's Automatic Sanitary Operating Table

FOR VACCINATING SWINE

The propaganda for farmer vaccination is spreading and extending, making it necessary for the veterinarian to meet and overcome this agitation. He must make his operation so different from that of a farmer so that there can be no comparison. His must be a scientific operation, whereas the farmer's can only be a mechanical manipulation. He will treat hogs, while the farmer will shoot serum. His work will be different only when it is BETTER. Dr. Clark's Automatic Sanitary Table makes BETTER work possible.

The price is $37.50, delivered to your address. This represents an investment rather than an expense. A couple of jobs with this table gives you more favorable advertising than you can get in any other way.

SOLD ONLY TO VETERINARIANS:

FISTONE

Fistone is only a name. The combination of minerals it represents is more than a name. It has proved to have remarkable curative properties in fistula of the withers, poll-evil and other chronic suppurative conditions, where despite surgical treatment the discharge continues month after month.

The influence of minerals on the resolution of chronic infections is well known.

It is an ethical, non-secret remedy sold only to veterinarians, and is the cheapest and most effectual treatment imaginable for these troublesome conditions.

Price $5.00 for the average case, postpaid **Guaranteed to make good**

Order Direct from Correspondence Invited

FISTONE AND APPLIANCE CO., COLLEGE CORNER, OHIO

combination sale. What treatment would you advise?—Illinois.

Reply: It is likely that this mule has a heart lesion, probably a valvular lesion, that dates back to a serious attack of pectoral influenza or distemper. The termination of such a case depends a great deal on the duration. A recent heart lesion of a young animal sometimes improves with age. We have always found that heart sedatives are more beneficial in such conditions than stimulants. The latter seem to aggravate the trouble. Nitro-glycerin is the medication we would prescribe.

EMMETT AND HOSKINS

(Continued from page 624)

in the so-called wire-grass region along the coastal plain. In this same territory osteomalacia is a frequent occurrence in cattle. The disease referred to by Cary is locally called "creeping sickness" or "sweeny" of cattle. It usually occurs in late summer after the rains have ceased and the wire-grass has become very tough and indigestible. The cows get poor, become emaciated, exhibit capricious appetites, become weak and lie down most of the time. Milch cows are reported to go down with this disease more frequently and earlier than other kinds of cattle, probably due to the fact that something needed in the animal economy is being taken from the body through the milk. Suckling calves do no develop this trouble and always remain healthy and make growth as long as they have mother's milk. Cary has suggested that these animals suffer from a deficiency of fat-soluble A, lime and phosphates.

TOXIC FEEDS

Hart and his associates at the Wisconsin Agricultural College have shown that a ration for cows must not be one-sided, or restricted to limited sources. Rations were prepared from the corn plant, the wheat plant and the oat plant alone. These rations were properly balanced from the standpoint of protein, carbohydrates, etc. The different rations were fed to different lots of young cattle. All three lots seemed to do fairly well, although before the experiment had gone very far it was quite noticeable that the calves receiving the wheat ration were not quite so thrifty as the others.

Wheat Ration Causes Ailment Simulating Infectious Abortion

The lot of calves receiving the wheat ration did fairly well until they reached an average weight of about 1000 pounds when they ceased

LATHROP
U.S. VETERINARY LICENSE No 102
ANTI-HOG CHOLERA SERUM

Made in the country—where the environment and surroundings are pure—free from all possible contaminating influences.

An exclusive product which should interest the veterinarian who "looks into and thinks of the future as well as the present."

Correspondence solicited from qualified veterinarians.

Lathrop Serum Co.
Lathrop, Mo.

There are different kinds of service:

Snappy Service
Good Service
Prompt Service
Scientific Service
Grain Belt Service

The last is the best. It is all of these combined, and means prompt delivery of Plus-Value Products with no disappointments.

There is not much wisdom in courting a handicap in the immunization of Hogs against Cholera. It is better to profit by the Sense of Security that is associated with Grain Belt Serum.

GRAIN BELT SERUM

is sold only to qualified veterinarians, and is produced by the

Grain Belt Supply Company

4901 South 33rd Street

Omaha, Neb.

Branch Office:

419 South Federal Avenue

MASON CITY, IOWA

Road Representatives:

Dr. D. M. Walker, Omaha Territory.

Dr. H. C. Krueger, Mason City Territory

to grow. As a matter of fact they actually lost weight. The animals showed a lack of vigor and in some cases actual weakness, blindness resulted in some cases. Some of the animals became so emaciated that it was necessary to kill them. Spasms were noted frequently, collapse would occur under the slightest pretext, followed by labored breathing and trembling. Those on the wheat ration failed to reproduce normally, some failed to conceive, and if pregnancy occurred the calves would be born approximately a month ahead of time. These calves would be under-size, weak and invariably died inside of four or five days. The cows would not clean properly and in several instances death occurred from metritis, and result of retainded placenta. It was established beyond a question of a doubt that none of these breeding difficulties were the result of infection with the abortion bacillus. The calves on the oat ration did not fair quite so badly as those on the wheat ration, while those on the corn ration did best of all.

Another lot of calves was fed a mixture of the three rations, and we would naturally expect that best results would be obtained with such a mixed ration. However, this did not prove to be the case, as the results obtained with the mixed ration were not so good as with the corn ration alone. The point is brought out in these experiments that a ration may be restricted but still be physiologically perfect, while on the other hand a mixed ration may contain something decidedly deleterious to its physiological value.

Wheat Inherently Toxic

Further studies with the wheat ration showed that the fault with this ration did not lie in a deficiency of the proper salts alone, but that there is an inherent toxicity in the wheat grain. Experiments further indicated that corn stover added to the wheat ration might act as an antedote besides furnishing sufficient salts so that the animals fed this combination would reproduce normally. Heat did not destroy the toxicity of the wheat grain. When 20% of the ration consisted of alfalfa the wheat grain apparently lost its harmful effect and normal offspring resulted. These experiments tend to show the limitation of some of our ideas concerning balanced rations and point very clearly to the importance of other factors besides protein and carbohydrates in the ration.

SUMMARY AND CONCLUSIONS

1. The success of the feeder of live stock depends upon his ability to utilize available

SIHLER SERUM

The Serum With A Good Record Behind It

OLDEST SERUM COMPANY

The oldest established Serum Company selling exclusively to the Veterinary Profession.

TIME TESTED IN THE FIELD

In the past fourteen years millions of cubic centimeters of SIHLER SERUM have been used in the field by discerning Veterinarians and it has "STOOD THE TEST OF TIME," giving satisfactory results, proving it to be a quality product, dependable, pure and high in potency.

During this time Veterinarians by the use of SIHLER SERUM have been able to establish enviable reputations in their community with profit to themselves and satisfaction to their customers.

SIHLER "HIGHLY VIRULENT" HOG CHOLERA VIRUS

The immunizing properties of a good serum, high in potency, depends on the virulency of the virus. Extreme care is exercised in the selection, cultivation and development of our virus strains. Only young highly susceptible pigs purchased direct from the country are used for the production of Sihler Virus. From time to time our inoculation virus strains are passed through dense filters to insure that only the pure filterable virus of hog cholera is present—free from contaminating micro-organisms.

SIHLER SERUM POLYVALENT

Sihler Hypering and Simultaneous Virus contains virulent strains obtained from the United States Government Experiment Station, Ames, Iowa, and from Government licensed plants located in Missouri, Kansas, Colorado, New York, Ohio, Texas, Iowa, Nebraska, Illinois and Indiana. These different strains of Hog Cholera Virus obtained from widely separated localities are combined and cultivated at our plant under Veterinary supervision and this is the reason we call Sihler Serums "POLYVALENT" and one of the reasons they give such excellent results in the field in whatever section used.

SIHLER SERUM COMPANY

KANSAS CITY, KANSAS

10. We must all guard against the natural tendency, in this era of fads, to be carried away with the "new idea". There is always the danger of going to extremes and "overdoing" a new idea, so we must be conservative until such time as these recent developments have had time to be digested.

---

11. There are undoubtedly a number of conditions that veterinarians are frequently called up to treat, which are due to nutritional disturbances traceable to faulty feeding. Study and investigation are constantly revealing new facts in this connection.

12. The absence of certain minerals, as well as the absence of certain vitamins, are equally capable of bringing about diseased conditions, which, if recognized early, may be corrected by the application of the proper treatment.

(The End)

Over 20,000 tests for B.pullorum infection the causative agent of white diarrhoea in chicks, were conducted by the New Hampshire Experiment Station, in 1922.

A case of anaphylactic keratitis in the human has been reported by Dr. Sydney Walker. The reaction was induced by the intravenous injection of normal blood serum (probably of equine origin).

Jorgenson has reported a series of experiments in which enteritis in suckling pigs was successfully controlled by a bacterin containing B. suisepticus, B. enteritidis, B. coli communis, B. paratyphoid, A & B, the paracolon bacillus, and the paracolon bacillus.

The proteolytic bacteria are the principal agents in the production of poisons in the intestinal canal and unfortunately, according to experiments evidenced, there is no antiseptic that will produce intestinal antisepsis and prevent the activities of those germs.

Fiileborn has found the larval ascarids invading the capillaries of the placental circulation in experimental animals. Is it possible that the intestinal tract of fetuses may be infested with larval ascarids that develop into adults in utero? Adult ascarids are of frequent occurrence in puppies that are less than ten days of age.

feedstuffs in such a way as to get maximum returns at minimum costs.

---

2. Perfectly sound and highly nutritious feeds may be combined and fed in such a way as to be wasteful, or even detrimental to the health of the animals receiving such feeds.

---

3. The successful utilization of feedstuffs depends upon the ability of the feeder to apply available knowledge concerning these various feedstuffs and their nutritive values.

---

4. Proteins, carbohydrates, fats, mineral salts, crude fiber (roughage) and water play important roles as constituents of most all feeds, best results being obtained when these are intelligently balanced.

---

5. In addition to these well-known constituents, there are other important substances—the vitamins—which must be present, in the diet. A ration properly balanced from every other standpoint, but lacking these vitamins, will not maintain animals in health.

---

6. There are at least four different vitamins, possibly five, and the absence of any one of these from the diet may result in faulty nutrition, giving rise to rather definite pathological changes.

---

7. These pathological changes may be manifest, after a time, in almost every organ of tissue of the body, the changes varying according to the vitamin which is absent, the time the animal is allowed to go without it, and the genus of animal affected. Some animals show the effects of certain dietary deficiencies sooner and more markedly than others.

---

8. Our present system of agriculture, more particularly certain practices in connection with the feeding of live stock, make it possible for mistakes to be made in the selection and combination of feedstuffs, the underlying motive being economy, through utilizing low-priced feeds.

---

9. Veterinarians must possess a thorough knowledge of the principles of nutrition and their practical application, so as to be able to recognize quickly any trouble due to nutritional errors.

Professional Consultation—Laboratory Diagnosis and Research

SERUMS—BIOLOGICS—INSTRUMENTS

Our best asset is the established conviction of our patrons in regards to the merit of our service and products

CORN BELT SERUM COMPANY

EAST ST. LOUIS **U. S. A.**

ANTI-HOG-CHOLERA SERUM

Whole Blood Serum, 85c per 100 c. c. for cash 10 days costs you 70c per 100 c. c.
Clear Serum, $1.00 per 100 c. c. for cash 10 days costs you 90c per 100 c. c.
Hog Cholera Virus, 85c per 100 c. c. for cash 10 days costs you 75c per 100 c. c.

We Have No Special Prices. What a Satisfaction to Buy From a One Price House

The People Who Put the "ACT" in Bacterins

Quality Biologic Company

86-88 North James Street **Kansas City, Kansas**

COMMENCEMENT EXERCISES OF THE INDIANA VETERINARY COLLEGE

The annual commencement of the Indiana Veterinary College was held in the college auditorium May 18, 1923. The auditorium was decorated with palms and flags and a large number of friends and relatives of the classes witnessed the ceremonies. The program was opened by an invocation by the Reverend F. B. Davies, and music was furnished by the Severin Hotel orchestra. The principal addresses were delivered by Hon. Robert N. Fulton of Indianapolis and Dr. T. A. Sigler of Newcastle, Ind. Dr. Jos. Shirley acted as valedictorian and the degrees were conferred by President L. E. Northrup on twenty-five successful candidates: Albert L. Blair, Vincent D. Bohannan, Harry W. Brown, Norval E. Christenberry, Raymond H. Dwyre, Fred Godsall, Roscoe E. Griffith, Boyd Jeffers, Fred O. Jacobson, Joseph T. Hennelly, Irvin S. Kleeman, J. Willard Larrison, J. John McClure, John E. Morphy, Glen H. Moore, William M. Mohler, Frank T. Owens, Bert S. Pierson, Marvin H. Rolighed, Arthur B. Russel, Henry R. Schrumpf, Joseph S. Shirley, Amos A. Turner, Leslie E. West.

L. J. McClure, Secretary of the Class.

KANSAS GRADUATES TWENTY-ONE

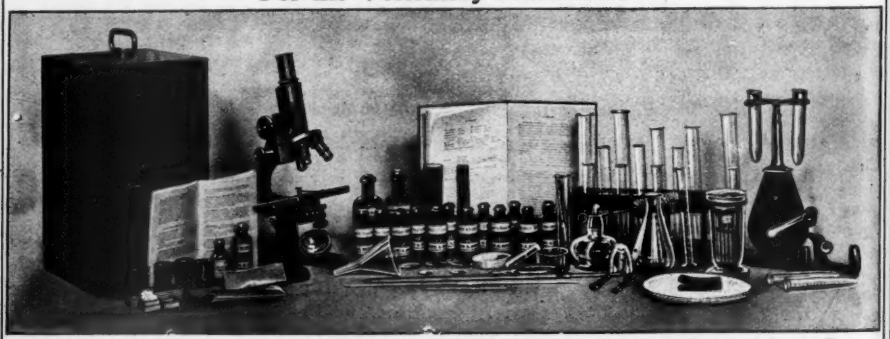
Among the graduates of the different departments of the Kansas State Agricultural college at the close of the collegiate year there were twenty-one who received the degree of doctor of veterinary medicine.

The exercises which were the sixteenth annual commencement of the college were held in the auditorium May 31. President Frank Le Rond McVey of the University of Kentucky made the principal address amid the usual decorum.

The veterinary degree was conferred upon James Frederick Adee, Russell Spencer Beaver, James Joshua Black, Carl Alfred Brandly, Frank Wright Crawford, Kent Ruggles Dudley, Frederick Earl Emery, Timothy Joseph Foley, Jr., William Darius Foss, Aubrey McDaniel Lee, James Alexander McKitterick, Lloyd George Grandfield, John Albert Howarth, Glenn Benson Kirkwood, Elden Emanuel Leasure, Ching Sheng Lo, Andrew James McKee, Dorsey Addren Sanders, Rush Urban Taylor, Donald Albert Yandell, Jay Ralph Starkey.

Betzco Complete Laboratory Outfit

For the Veterinary Practitioner



This complete practical outfit will equip you to take full advantage of the excellent training in Bacteriology, Pathology, etc., which every Veterinarian gets in school. It will enable you to cash in on this training and specialized knowledge. Diagnoses are confirmed, or made with greater accuracy and definiteness. Clients are favorably impressed by evidence of superior knowledge, have more confidence in you, and employ you more freely.

This outfit includes all equipment and reagents necessary for Bacteriologic and Pathologic work, including urinalysis, differential blood counts, etc. Write for descriptive circular.

2 VM Betzco Laboratory Outfit with Spencer Microscope $155.00

Frank S. Betz Company

Chicago **Hammond, Ind.** **New York**

EGYPTIAN PATHOLOGY

"We learn that the inhabitants of the Nile Valley, the cradle of history, suffered from disease of the joints as far back as their pathology can be followed, and to a far greater degree and at a much earlier age than we now see this disease. The enthusiast on focal infection will be delighted to know that infection from the teeth was rife among these arthritics, who hobbled to their graves a few thousands of years since."

"The demonstration that a humpbacked priest of Ammon, 1,000 years B. C., owed his hump to Pott's disease shows how little 3,000 years have altered the behavior of tuberculosis. Pneumonia is demonstrated in these old bodies, with bacteria still in a stainable condition."

"Sarcoma of the bone is identified in the skeleton of 250 A. D. Lesions closely resembling small pox can still be recognized and studied by modern microscopic methods in these old mummies."

"Arteriosclerosis was common and severe in those days, when tobacco, excessive meat eating, modern strenuosity, and such things that nowadays are blamed for this condition certainly did not exist."

"Egyptian art has much reference to the dwarfs and other deformed persons of that day, which shows that rickets has probably existed for 5,000 years, and that the deformities characteristic of Pott's disease and of clubfoot were put on record about 4,000 years ago."

"In the intestines of mummies 5,000 years old, there have been found relics of grain and epithelial cells of a common plant, the trichodesma, which is a household remedy to this day in certain countries for intestinal irritations and catarrhal conditions of the air passages."

"This was accompanied in some cases by mouse bones, recalling the Chinese pharmacopoeia. Although fractures seem to have sometimes been skilfully cared for, and many persons in many climes survived trephining, nevertheless it seems that therapeutics has altered more than disease during the last fifty centuries."—Jopr. A. M. A.

THE FOSTORIA SERUM CO.

FOSTORIA, OHIO, U. S. A.

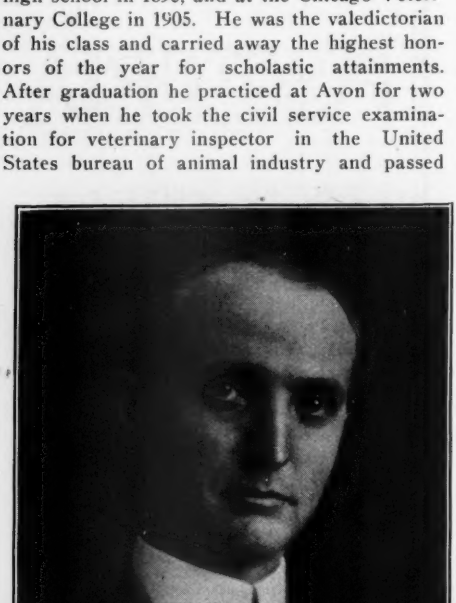
Manufacturers of

Anti-Hog Cholera Serum

Hog Cholera Virus

Under U. S. Veterinary License No. 131

The veterinary profession suffered a real loss when Dr. G. M. Predmore died at his home in Avon, Illinois, on May 18. He was born at Youngstown, Ill., in 1876, graduated at Avon high school in 1895, and at the Chicago Veterinary College in 1905. He was the valedictorian of his class and carried away the highest honors of the year for scholastic attainments. After graduation he practiced at Avon for two years when he took the civil service examination for veterinary inspector in the United States bureau of animal industry and passed



GEORGE MAHLON PREDMORE
(1876-1923)

with a high grade. He remained in the government service for seven years and then resigned to become general manager of the Wichita and Oklahoma Serum Company which position he held until ill health compelled him to discontinue all work.

A highly useful career was interrupted when Dr. Predmore departed this life. He was a man of pleasing personality and refined tastes that endeared him to all of his many friends and associates, and his devotion to his wife, parents and sisters are related as an outstanding trait of his home life at Avon where he returned to spend the last months of his life among the relatives who mourn his demise. He is survived by his widow, his aged mother and father and two sisters.

The faculty of the Chicago Veterinary College of that period and the class of 1905 recall in Dr. Predmore a character that is never forgotten; neat in apearance, modest, accommodating, and a hard worker whose deportment under all conditions was that of a gentleman and a scholar.

VETERINARY PRACTITIONERS' WEEK AT UNIVERSITY OF CALIFORNIA A SUCCESS

The recent Veterinary Practitioners' Week held at the University Farm at Davis, California, January 2-5, 1923, was a very successful meeting. One hundred and forty-five men were registered out of the total of three hundred active veterinarians in California. Doctor W. E. Muldoon, of Kansas, and Doctors A. Eichhorn and J. F. DeVine, of New York, were the principal lecturers at the course.

Muldoon's Horse Clinic Attractive

Doctor Muldoon touched on a variety of topics, which his wide experience enabled him to handle in a very successful manner. His discussion of the subject of general therapeutics with the lecture on the external and internal administration of drugs was timely and enlightening, and this was the first time the subject has been presented at the short courses.

His operation of intestinal anastomosis and gastrotomy in the dog were skillfully performed and brought out new facts to a majority of the veterinarians as to the best method of performing these operations.

His lecture on lameness in the horse and the surgical clinic on the horse were of great interest to a great majority of the attending veterinarians. Despite the reduction in horse practice all the men not specializing in small animal practice still have a considerable amount of work on the diseases of horses.

DeVine's Lectures Very Practical

Doctor DeVine's lectures on the diagnosis of pregnancy and treatment of sterility in the cow and mare were especially well received. Given in his very practical style, the practicing veterinarian obtained a maximum benefit and the discussions that took place were entered into by a high percentage of the practitioners

and extended beyond the regular allotted time for the work. In his final lecture on business methods in practice, its organization and management, a masterful presentation of this subject was given and his closing remarks will undoubtedly long be remembered by the California veterinarians.

Eichhorn Discusses Rabies and Anthrax

Doctor Eichhorn's opening lecture on rabies, its prevention and control, touched a problem of great importance in a number of sections of California at this time and was of great value in clearing up mooted questions regarding this disease which the practitioners and officials have been repeatedly facing for the past year in this state. His observations on the veterinary profession in Europe during his recent extensive travel through that country brought down to the minute the latest research in all of the major infectious diseases of animals.

In the lecture on biological methods for the control of anthrax, a subject of annual importance to the livestock interests of California, Doctor Eichhorn discussed in a clear and forceful manner some recent developments and the newer ideas in regard to the many questions covering the exact method of treatment and procedure of handling this disease.

Small Animal Practice by Local Veterinarians

On account of the attention given to small animal practice the men engaged in this work were well represented and the symposium given during the first evening under the direction of Dr. Muldoon, assisted by Drs. O. A. Longley, O. J. Kron, W. A. Boucher, and D. F. Fox, practicing veterinarians of California, brought out facts of importance in this field.

State B. A. I. Problems Discussed

The subject of uniformity of methods of tuberculin testing, by Dr. J. P. Iverson, chief of the state bureau of animal industry, and the policies and methods of enforcing the state dairy law by Dr. J. Frey, with a similar talk by Dr. M. Rosenberger on enforcing the meat inspection law, followed by a discussion of the influence of diet on swine diseases by Dr. Robert Jay, the federal co-operating agent, together with a moving picture, "Exit Ascaris", from the United States bureau of animal industry gave the practicing veterinarians an insight into the work of the official veterinarians of this state.

Special Lectures on Red Water and the Estrus Cycle

The latest work on red water was presented by Drs. E. Records and L. R. Vawter of Nevada.

PURITY
Purity
BIOLOGICAL
First
LABORATORIES

TRADE MARK
REG. U. S. PAT. OFF.

WHY WORRY

about the

PROBABILITY OF HAVING TO RE-VACCINATE?

Use a Serum That Is Worthy of Your Confidence

The "Old Reliable" Purity Anti-Hog Cholera Serum Always "Immunizes"

Made by Experienced Veterinarians

PURITY BIOLOGICAL LABORATORIES

Sioux City, Iowa

FOR
NINE YEARS

"We have produced anti-hog cholera serum and virus and nothing more; and we believe we have done that well. Our patrons think so too."

GUILFOIL SERUM COMPANY
Offices and Laboratory
18-20-22 North Second Street
KANSAS CITY KANSAS

A special lecture on estrus cycle studies and the relationship of diet to fertilization covering extensive nutritional work done by Drs. Evans and Bishop of the division of anatomy of the University of California medical school, was one of the features of the program. The work of these scientists has attracted national attention and while it has been largely confined to the white rat it has clearly opened the possibility of interest and application to the breeding difficulties of all domestic animals.

Symposium on Infectious Abortion

During one evening the members of the Division of Veterinary Science occupied the time with a symposium on infectious abortion, followed by a discussion by Drs. DeVine and Eichhorn.

Conference Closed with a Surgical Clinic

The meeting closed Friday afternoon with surgical operations on the horse by Dr. Muldoon, assisted by Drs. McKenna and Carr, and there was a general feeling that the practitioners had been well repaid for attending the course and that they were greatly indebted to the visiting lecturers who contributed so much to the success of the week.

The germ theory of disease was described by Boile in a book published during the reign of Louis XV. This antedates Pasteur a good many years and is the oldest authentic description of infection that has been identified.

According to reports, a variety of infections are found in swine in other countries as well as in the United States. Brnynoghe, and his collaborators recently investigated an epizootic in swine in which the B. paratyphoid, B. erysipelatis suis, B. coli and various pyogenic cocci were identified and incriminated as causative factors. It is also interesting to note that a bacterin was made and used with apparently good results.

The Court of Appeals of Texas has upheld the validity of an ordinance passed by the city of Dallas, requiring that all persons who work in a food establishment shall be examined by a reputable physician and found free from disease. The ordinance includes proprietors of meat markets and groceries and the person who sought a writ of habeas corpus was the proprietor of a meat market who was convicted for not having a health certificate. If such ordinances could be extended to include milkers and handlers of milk, it is possible that the cow might be relieved of some of the blame that is heaped upon her.

SIMPLE, OLD-FASHIONED MEDICATION PROBABLY THE BEST

By Reeds

Febrifuge

℞

Potassium nitrate .....5 ozs.
Magnesium sulphate .....30 ozs.

Give three ounces in the drinking water or feed three times a day, for horses and cattle.

This for Strangles

℞

Powdered fenugreek
Powdered anise
Sodium chlorid
Sodium hyposulphite, of each.....8 ozs.

Give an ounce in each feed.

Healing Ointment and Fly Repellent

℞

Oil of cajuput .....3 drs.
Tannic acid
Lead acetate
Charcoal, of each.....1 oz.
Petrolatum .....1 lb.

Apply when and where necessary.

Phenocal Analysed

℔

Phenol .....5½ drs.
Zinc oxid .....4 oz.
Calomel .....1½ drs.
Starch .....4 oz.
Petrolatum .....1 lb.

Use where an ointment is indicated.

For Capped Hock, Curbs and Other Enlargements

℞

Biniodid of mercury.....6 drs.
Potassium iodid .....3 drs.
Water .....1 pt.
Coloring .....q. s.

Apply twice a day. (The chemical change that occurs in making this solution is said to give it the combined absorbent properties of mercury and iodin.)

Mrs. Mary Vaughn Bruce, wife of Dr. T. Benton Bruce, the well known veterinarian of Camden, South Carolina, died at her home March 14th, after a lingering illness. She is survived by Dr. Bruce and four children, between the ages of 4 and 16 years.

TRY IT! *IT WORKS!*

Black Tongue Treatment

SATISFACTION GUARANTEED

Would you try something that has been curing over 90% of the cases treated? If so, we offer you a chance to try our Black Tongue treatment.

In offering this treatment we wish to state that where the disease is of 5 to 7 days duration the treatment is doubtful although some cases have recovered. Cases of only 3 or 4 days duration or less, have responded to this treatment almost without exception.

It is our desire to market this treatment through the Veterinary Profession only. We offer it at Five Dollars ($5.00), less 40% to veterinarians.

If you will try it on a fair case and are not satisfied with the results, we will refund your money. You have everything to gain and nothing to lose if not satisfied.

Could we do more for you?

4V Black Tongue Co.,
O. M. Norton, V. M. D.,
Manager
109 Main St., Greenville, Miss.

IT WORKS! *TRY IT!*

TAPEWORMS in DOGS

are easily dealt with by TENALINE—the remedy you will want every time. Another U. S. Veterinarian writes that he was more than pleased with the results he obtained from Tenaline; that it

Certainly Gets the Worms

Price, $1.60 per 2 oz. Bottle of 30 Doses depending on weight of animal.

Cash with Order.

From

R. J. VICKERS

THE PLAINS, VA.

Sole Agent U. S. A. and Canada
For
Willows, Francis, Butler & Thompson, Ltd.,
40, Aldersgate St., London, England

CLASSIFIED ADVERTISMENTS

For Sale, Wanted, etc., $2.00 for 25 words or less; additional words, 8 cents. 25 cents extra when replies are sent care of the journal.

FOR SALE—WANTED

DODGE COUNTY HOLSTEINS. The hub of Wisconsin Dairy Industry can supply car-load lots of grade or pure bred cows, all guaranteed sound and healthy in every way. Any age desired. For full information address No. 738, VETERINARY MEDICINE.

FOR SALE—My hospital equipment, such as Simplicity table, Ajax stock office fixtures, and give possession to the right man. My health is forcing me. Corresponders and vistors are welcome. Some practice if you can stand it part of the time day and night. If interested, write No. 739, VETERINARY MEDICINE.

FOR SALE—Hospital and practice in Central Illinois. Forced to sacrifice on account of health. Hospital completely equipped; reasonable for quick sale. Address No. 740, VETERINARY MEDICINE.

NEBRASKA PRACTICE FOR SALE. Very large territory, good town, unopposed location. Very small investment. Modern town. Thickly settled. Good part of state. Details, practice done, etc. Address 3332, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebraska.

WANTED ASSISTANT. Single man. Middle aged preferred. Address Dr. Walter McKillip, 1639 Wabash Ave., Chicago.

ASSISTANT WANTED—Must be young, healthy, protestant, this year's graduate, single, have a clean appearance, morally sound, with a special aptitude for dog and cat work. Mail application to Drs. Burkey and Horning's Dog and Cat Hosptal, 1711 Preston Avenue, Houston, Texas.

WANTED—A VETERINARIAN. I have a very good and lucrative practice, but I also have something else in sight that may take up considerable of my time and I want a man that can and will try to take care of the practice. I have a very good berth for a good man and can afford to pay accordingly, anywhere from $200.00 to $500.00 a month with a good chance to improve all the time, but I do not want a dub at any price. My practice is general, both large and small animals, some Railroad work that requires knowledge, conscience, truth, integrity and ability. Apply Dr. Hamlet Moore, 622 N. Rampart St., New Orleans, La.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

VETERINARIAN'S LEDGER CARDS, 3x5 (same as furnished with "VETERINARY MEDICINE" accounting outfits) per 1000, $5.70; per 100, $.75 postpaid. Wabash Cabinet Co., Wabash, Ind.

SPECIAL OPPORTUNITY to the first veterinarian in each locality to start a Silver Fox Farm. Write for free information. Duffus Silver Fox Co., 21 West 30th St., New York, N. Y.

LET US TAN YOUR HIDE—Cow and Horse hides for fur coats and Robes. Cow and Steer hides into Harness or Sole Leather. Catalog on request. We repair and remodel worn furs; estimates furnished. The Crosby Frisian Fur Co., Rochester, N. Y.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. Established 1904.

WANTED—To buy freak animals, live or stuffed. Send photograph and lowest prices. Address C. C. Browning, Riverview Park, Chicago, Illinois.

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 30 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

"BOOKS YOU SHOULD HAVE"

(Only books Indispensable to the Practitioner are Advertised in this Column)

DISEASES OF THE SMALL DOMESTIC ANIMALS

By O. V. Brumley, Ohio State University
Lea & Febiger, 706-710 Sanson st., Philadelphia
672 pages, cloth. Price, $4.75.

VETERINARY HYGIENE

By Martin Klimmer, translated by A. A. Leibold
Alex Eger, 9 South Clinton St., Chicago.
430 pages, cloth. Price, $4.75.

TWENTY-SIXTH ANNUAL REPORT OF THE U. S. LIVESTOCK SANITARY ASS'N.

Ready for distribution. Price $2.00. Address VETERINARY MEDICINE, 1827 South Wabash, Chicago, Illinois.

Pammel's "Manual of Poisonous Plants." Price, $7.50. Address orders to: Prof. L. H. Pammel, Iowa State College, Ames, Iowa.

FIELD AND FANCY

The leading weekly paper in America devoted to dogs. Of special interest to Veterinarians. Send for free sample copy and list of foreign and domestic books about dogs. Field and Fancy Publishing Corporation, 205 West 34th Street, New York City, N. Y.

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

STOLL STAY-THERE EAR MARK

The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL, 3012 Webster St., Omaha, Nebr.

POULTRY DISEASES

C. T. Poultry Antiseptic No. 1

Zinc Sulpho. Carbolate	15 grs.
Sodium Sulphate	7 "
Corrosive Sublimate	6 "
Citric Acid	3 "

Indicated in Cholera, and all Diarrhoeal conditions in Poultry $1.00 per 100.

C. T. Alkaseptine

Sodium Bicarbonate .....48 grs.
combined with
Sodium Salicylate
Sodium Borate
Sodium Benzoate
Eucalyptol
Thymol

Indicated in Catarrhal conditions in Poultry—Bronchial and Intestinal. Also in sore mouths, cankers, roup, etc. $.95 per 100.

For the convenience of our customers we put up C. T. Poultry Antiseptic No. 1 and C. T. Alkaseptine in 4 oz. Utility Boxes. Each box holding 20 tablets, with printed directions under the veterinarian's own label (in orders of not less than ½ gross), which makes a convenient dispensing package.

$35.00 Gross - $18.00 per ½ Gross.

R. J. STRASENBURGH CO.

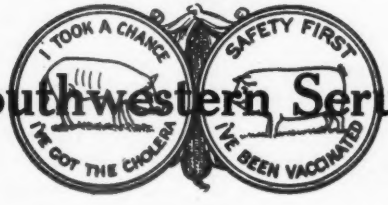
Manufacturing Chemists
Rochester, N. Y.

—OUR REPUTATION—

AND YOUR GUARANTEE OF SATISFACTION

TEN years ago we laid a foundation of service and placed our corner-stone of fairness. Since then we have built, day by day, with carefulness and uniform satisfaction to the heights of our present-day success and reputation. This reputation of satisfactory service and fair dealing is, today, your guarantee of our service to you.

LET US PROVE THIS SERVICE IN YOUR NEXT ORDER FOR SERUM



The Southwestern Serum Co.

Wichita, Kansas

or,

Holmes Serum Co., 225 E. Washington, Springfield, Ill.
Dr. Jos. D. Cecil & Co., 305 W. Fifth St., Waterloo, Ia.
Holmes Serum Co., 146 So. Kellogg St., Galesburg, Ill.
The Beebe Laboratories, 164 W. Third St., St. Paul, Minn.

DEPENDABLE VIRUS

The results to be obtained from the use of serum in the field are absolutely dependent on the virulency of the virus used simultaneously. Buy United Serum Company virus and be assured of the highest virulency obtainable.

❖❖❖❖

United Serum Co.

Kansas City, Kansas

To the Editor: Please find enclosed $8.00 for two years' subscription, and send me a copy of the January issue. It either did not come or has been mislaid. I can not afford to miss a single issue, as each one contains so much useful and timely information. It may be a surprise to you but of all the periodicals we take and buy at the news stands there is none that is looked for by my family like VETERINARY MEDICINE.—C. H. J., Pa.

Arthur A. Theobald, a junior student of the veterinary department of the Ohio State university, was elected president of the Gamma chapter of the Tau Sigma fraternity of the university recently. Theobald is post adjutant of the University Post of the American Legion, member of the Men's Pan-Hellenic Council, and secretary of the Zero Hour Club. He is a native of Glendale, Ohio.

Drs. J. R. Fuller and H. A. Trippeer, of Walla Walla, Washington, among the most progressive veterinarians of the Northwest and who have unquestionably the largest practice in that corner of the United States, find that it pays to maintain an up-to-date establishment in the business district. They have modern offices, consultation room, pharmacy, and operating room for small animals in the Elks' building. The kennels are located in a more outlying district. Walla Walla being located in the great wheat belt, horse and mule practice is reported to be good and dairy practice on the increase.

DRUG MANUFACTURERS HONOR DR. BURDICK

The American Drug Manufacturers Association is composed of the leading pharmaceutical and chemical manufacturers of the United States, including Park Davis & Company, Eli Lily, Mulford & Company, Sharp & Dohme, Frederick Stearns, The Abbott Laboratories, Powers, Whiteman & Rosengarten, Mallinckrodt, Monsanto, Johnson & Johnson, etc.

This association is organized for the purpose of improving conditions in pharmaceutical manufacturing. Doctor A. S. Burdick, President of The Abbott Laboratories, was elected President of The American Drug Manufacturers Association at their recent annual meeting in New York.

Dr. E. A. Allen died at his home, 167 North street, Peoria, Illinois, September 25, 1922, according to a belated report just received. Dr. Allen graduated at the American Veterinary College in 1895 and served with the Bureau of Animal Industry in New Jersey and Illinois for a number of years.

Dr. E. H. Kinnet, prominent practitioner of Bushnell, and Miss Lena Orr, of Meredosia, Illinois were united in marriage the last week of May. They will live in Bushnell where the doctor has practiced his profession for many years.

Dr. James C. Quinlan, a veterinary practitioner of San Francisco, drove away from his office in his automobile, January 31 and was never thereafter heard from. Search through the wilds of San Meteo county, into the ravines along his customary roads of travel and dragging of the bay waters about the wharfs, have failed to shed any light on his mysterious disappearance.

Dr. L. Enos Day, chief of the pathology division of the federal bureau of animals industry, at Chicago has returned from Central America where he was sent to study the foot and mouth disease situation. He will address the Illinois State Veterinary Medical Association and University Conference July 10-12 on "The livestock industry of Central America."

Secretary Dinsmore of the Horse Association of America has been invited to address the North Dakota Bankers Association on the horse situation. He will make addresses at Minot, Grand Forks, Devil's Lake, Fessenden, and Fargo. "Bankers are doing everything possible to discourage the purchase of tractors and trucks by farmers," it is declared.

LUCKY DOGS

The following prescription is recommended in a recent European publication as a proper treatment of dogs convalescent from distemper:

℞

Brandy .....1 oz.
White wine .....2 oz.
White of one egg .....
Milk .....8 oz.

The posology is—Well, we leave that to the reader's discretion.

TO THE PROFESSION

Veterinarians the country over are looked to for the prevention of hog cholera in their respective territories.

The ability of the veterinarian, however, is always dependent on the potency and virulency of the serum and virus administered.

ALWAYS USE

UNITED SERUM

AND

VIRUS

W & O Brand
Universal Brand

United Serum Co.
Kansas City,
Kansas

GLOBE LABORATORIES

Standard of the World

Our business for the past several years has been increased approximately 100 per cent each year.

THERE IS A REASON

Clear Anti-Hog Cholera Serum
Concentrated Clear Anti-Hog Cholera Serum
Regular Anti-Hog Cholera Serum
Hog Cholera Virus
Mixed Infection Bacterin
Swine Plague Bacterin
Hemorrhagic Septicemia Bacterin—Bovine
Hemorrhagic Septicemia Bacterin—Ovine
Abortion Bacterin (Bovine)

GLOBE BLACKLEG AGGRESSIN

Globe service the snappiest service on the Globe

Our Distributing Offices

Globe Serum Company, 314 Nebraska St., Sioux City, Iowa.
Globe Serum Company, Cedar Rapids, Iowa
Globe Serum Company, Peoria, Illinois
Globe Serum Company, Indianapolis, Indiana.
Globe Serum Company, St. Regis Hotel, El Paso, Texas
Globe Serum Company, P. O. Box 625, Dr. O. E. Lindburg, Mgr., Lincoln, Nebr.
Globe Serum Company, 300 Live Stock Exchange Bldg., Denver, Colo.
Barber & Cochran, Live Stock Exchange Bldg., Oklahoma City, Okla.
Brashier Brothers, 202 W. Capitol St., Jackson, Miss.
Burris & Mays, P. O. Box 511, Shreveport, La.
Memphis Serum Company, Memphis, Tennessee
Thatcher Serum Company, Riverside, Calif.

Globe Label—Your Insurance Policy

GLOBE LABORATORIES

FORT WORTH **TEXAS**

Twenty-eight students of the senior class of the St. Joseph Veterinary College graduated April 13.

Dr. A. M. Avery, formerly of Nebo, Illinois, has moved to Watts, California.

Dr. W. G. McAninch was elected marshal of his home city, Lamar, Missouri, at the April elections.

Dr. L. P. Talbot, Osceola, Iowa, reports that practice is exceptionally good.

Dr. Mack Davis engaged in tuberculosis eradication work has recently been transferred from Marshall to Carthage, Missouri.

Dr. and Mrs. K. H. Gubser, Adel, Iowa, announce the arrival of their first born, Shirley Jean, born May 29th.

William M. Mohler, son of Chief Mohler of the United States bureau of animal industry was among the 1923 graduates of the Indiana Veterinary College.

Dr. A. N. Overbaugh, Renick, Iowa, has purchased the practice of Dr. P. A. Weires of Allison, Iowa.

The sympathy of his colleagues and friends goes out to Dr. J. C. Young for the unfortunate loss of his wife who died at their home at Marianna, Arkansas, June 3rd.

Dr. W. S. Rader of Broken Bow, Oklahoma, believes Smackover of that state is a better field and has moved there to practice.

Dr. Carl Viers was elected mayor of Vermillion, S. D. at the April elections. The doctor is also president of the Shrine club, worthy patron of the Eastern Star and master of the Masonic lodge.

Dr. M. C. Fitzwater writes that Canton, Pennsylvania, is a good location for a live veterinarian. He is leaving that city soon for a trip west to engage in another business. "Canton is located in a well-improved dairy county," he says, "and anyone interested may refer to me. I have nothing to sell."

Buy Direct!

Save 10 to 25%

We Prepay Freight

on orders of $25.00 and over in the states of

Illinois	**Missouri**
Iowa	**Nebraska**
Kansas	**Oklahoma**

In all other states we allow 5% of the total amount of orders of $25.00 and over.

Liquor Cresolis Comp., U. S. P.

	Gal.
50 gal. drums, inc.	$1.58
30 gal. drums, inc.	1.67
10 gal. cans, inc.	1.89
5 gal. cans, inc.	1.94
1 gal.	2.25

Fly Relief

Efficient—Harmless

	Gal.
50 gal. drum	$ .64
30 gal. drum	.74
10 gal. can	.84
5 gal. can	.92
6 1 gal. cans	1.05

All containers inclusive.

Less 3% for cash with order

Ask for price list

Satisfaction or Money Back

United Chemical Companies

Kansas City, Missouri

SIMONSON SERUM

U.S. VETERINARY LICENSE NO. 27

Announcing our new policy of better serum and virus for less money

SIMONSON SERUM IS A HIGH CLASS FILTERED SERUM. We remove the solids and inert material by Filtration. The result is a thin, refined serum of high potency and purity with excellent keeping qualities.

It works nicely in your syringe, is quickly absorbed and does not produce abscesses.

All serum and virus sold by us is produced in our own plant.

We do not produce Whole Blood and Clear Serum. We make only one kind, it is the best we can make regardless of cost and it is not diluted with salt water.

We have no branches or distributors. When you buy Simonson Serum you are receiving a first hand product shipped direct from our plant and you are buying it from 20 to 30% below the price it would sell for if sold through branches or distributors.

Our Service is prompt. Wire us your next order.

We Appreciate Your Business

THE SIMONSON SERUM FARM

P. SIMONSON, D.V.S., MGR.

HOOPER, NEBR.

DAY PHONE NO. 24 OR 212

AFTER 6 P.M. 1-210 OR R-212